

Machine and Tool BLUE BOOK

SEPT.

1947

MACHINE TOOL SHOW ISSUE

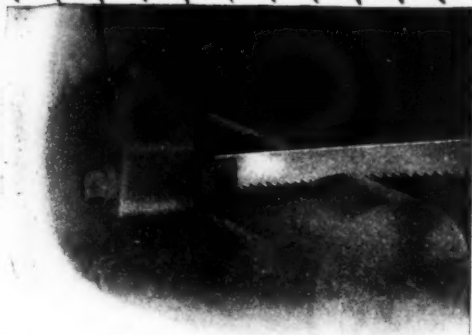
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PUBLICATION

**Which is better
for you...**

**A Hack Saw,
or a
Band Saw?**



Only MARVEL can give a strictly
impartial answer for only MARVEL
manufactures **both** hack sawing

machines and metal cutting band sawing machines, and manufactures **both** hack saw
blades and metal cutting band saw blades. For this reason, your local MARVEL Saw-

ing Engineer is best qualified to analyze your particular
metal-sawing or cutting-off problems and recommend,
without bias, the type sawing machine and correct blade
to do your work most efficiently.



MARVEL recommendations are based on actual opera-
tional laboratory and field tests covering **cutting-off time
and costs** for bars, tubes, and shapes on all types of saw-
ing machines and with various blades. (It is
significant that time factors of various so-call-
ed "fast" machines vary as much as 4 to 1 on
many operations, while costs differ as much as
6 to 1).

Write for new catalog C48, and if you feel that
our field service engineer may be helpful to
you, let us know.



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SAWS
Better Machines—Better Blades

ARMSTRONG-BLUM MFG. COMPANY

"The Hack Saw People"

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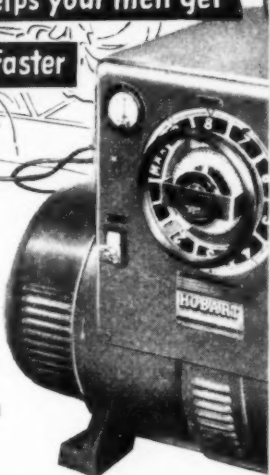
**Production
stepped up ...**

**Conservatively
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because of Hobart's quick current adjustment controls and exceptional arc stability. Remote Control enables the operator to make current adjustments right at the work, saving time and steps returning to machine to make adjustments. allows more continuous welding service than other machines of same rating. Greater copper content in welder means cooler operation and better arc characteristics over long periods of time.

too numerous to mention in this space, are found in the new Hobart Arc Welder Catalog. Just off the press, you'll find this catalog contains a type and size arc welder for every application. Every welder is illustrated with detailed specifications. Return coupon today for your copy, FREE.



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press, showing
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as newly devel-
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machines FREE!

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This new Bulletin No. 10000 previews the new and improved RIVETT machines that will be demonstrated at the Machine Tool Show. It is offered to help plan your time at the show and to keep you informed on RIVETT progress. See these new machines: 10" toolroom lathe, 10" universal toolroom grinder, 9" precision cabinet lathe, and 9" precision cabinet turret lathe.

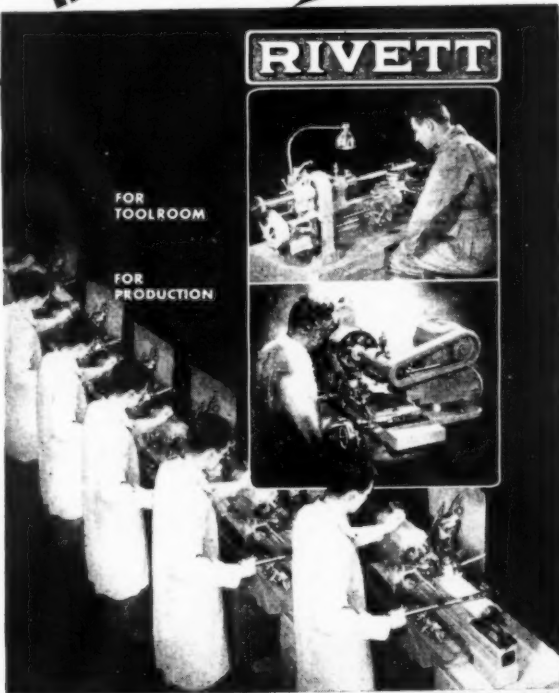
BOOTH 28

RIVETT

FOR
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FOR
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*More
Precision
Work*



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MACHINE TOOL SHOW
BOOTH No. 46

MATTISON
HIGH-POWERED
PRECISION
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● Rugged, High Powered and Versatile, Mattison Precision Surface Grinders, with double-column construction are built to handle your grinding jobs on a real production basis, providing repeated precision results and a fine finish. They are built with table sizes from 12" to 36" wide by 60" to 192" long. To appreciate what these machines can do we suggest you stop at Booth Number 46 at the Machine Tool Show where different sizes of the latest type Mattison Grinders will be in operation.

**WIDE ABRASIVE-BELT
GRINDING and POLISHING MACHINE**

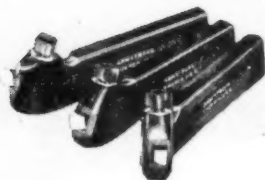
● From the time factory coated abrasives were introduced for metal polishing and grinding, Mattisons have developed and built machines properly applying belts to do the job to be done. The Wide-Belt Sheet Grinder and Polisher shown above is for finishing stainless steel and alloy sheets in sizes up to six feet wide and sixteen feet long. To see what this machine is capable of doing stop in at Booth Number 46 during the Machine Tool Show September 16 through the 27th.

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1947
MACHINE
TOOL
SHOW
Booth No.
406



Machine and Tool BLUE BOOK

Published Monthly Volume 43, No. 9

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SEPTEMBER, 1947

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PATENT NO. 2403861

CENTER DRILLS

**TIP
CLEARANCE**

**TIP
CLEARANCE**



This photo is 3 times actual size of a patented HY-CO center drill.

TIP CLEARANCE PROLONGS LIFE

Center drill breakage can be reduced only when drills have "Tip Clearance", and only HY-CO Drills have this patented feature. Savings due to tip clearance are phenomenal. HY-CO Drill users (names on request) are reporting two to four times increased tool life, and some records (available) show savings up to ten times greater than with conventional center drills.

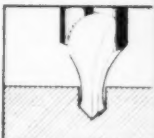
How Tip Clearance Prevents Breakage

Note from enlarged photo above and the side sketches, that there is a decreased load on the cutting edge. Due to tip clearance there is freedom from binding in the pilot hole, which combined with the greater spiral relief made possible by the drill contour, permits easier flow of chips and less danger of chip jamming. But longer drill life is not the only advantage of HY-CO Center Drills.

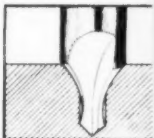
Band Contact abolishes out-of-round work

The Sphere-O-Form contour leaves a hole with convex sides. When the 60° machine center enters the curve it automatically establishes a true, never changing center of rotation. This **BAND CONTACT ABOLISHES OUT-OF-ROUND WORK** and provides increased lubrication for a cooler bearing between work and machine center.

HY-CO Center Drills not only outlast old style center drills, abolish out-of-round work, and increase machine center life, but they eliminate the need for type "B" drills by automatically providing the safety feature of bell-type drills. Write today for complete information, prices and nearest distributor—HOWARD H. HEINZ, INC., DEPT. 88, 2525 HILTON ROAD, DETROIT 20, MICHIGAN.

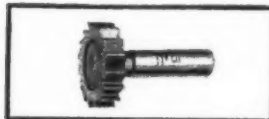


Due to tip clearance the very tip of a HY drill does the drill. Normal frictional heat less; it is created on tip—is dissipated radial surface.

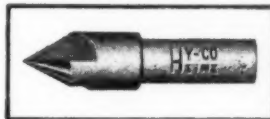


A finished center hole. Sphere-O-Form contour abolishes FATIGUE PC—the convex center enables the machine center to form a **BAND CONTACT** which eliminates machine centers.

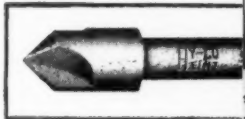
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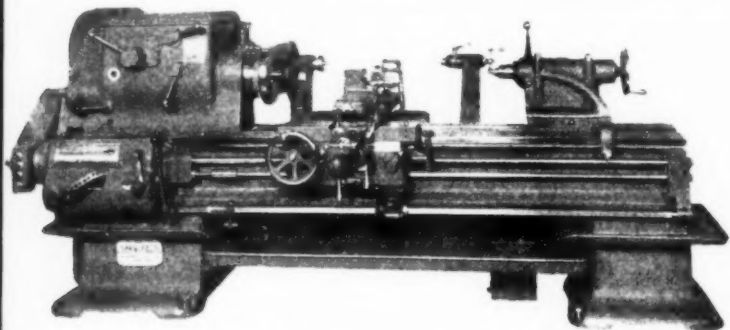
This SPRINGFIELD machine will duplicate almost any job from bottle moulds to cam forms. Illustrated as an integral

part of a Springfield 20" lathe. Other sizes are available.

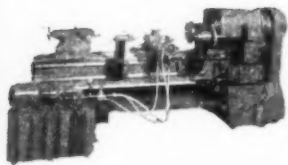
Any type of template can be used with this very versatile SPRINGFIELD DUPLICATING MACHINE.

It has twelve spindle speeds and further speed reduction by a special two-speed gear box. The hydraulic pump unit is separate and may be located in any convenient position. Your operator has a clear view of the cutting tool while operation is in progress.

The SPRINGFIELD DUPLICATING MACHINE is also adaptable for regular lathe work.



◆ FRONT VIEW



◆ BACK VIEW

WRITE FOR MORE INFORMATION

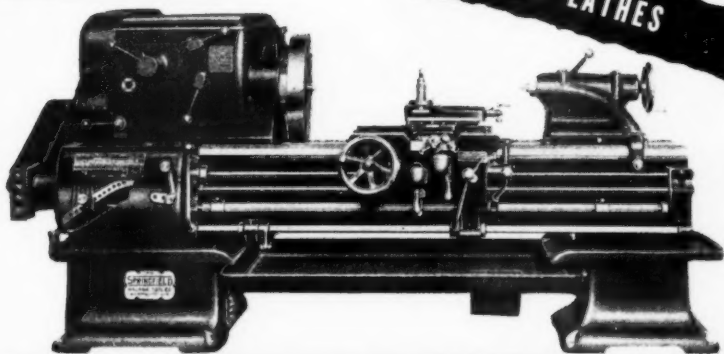
The Springfield

SPRINGFIELD, OHIO, U. S. A.

FIELD

HEAVY DUTY GEAR

HEAD LATHES



TOOL ROOM LATHES are equipped with Lead Screw Reversing Mechanism, producing right and left hand threads and feeds controlled by lever at right hand side of Apron with automatic stops for both Lead Screw and Feed Rod. Oil Pan is also included as regular equipment.

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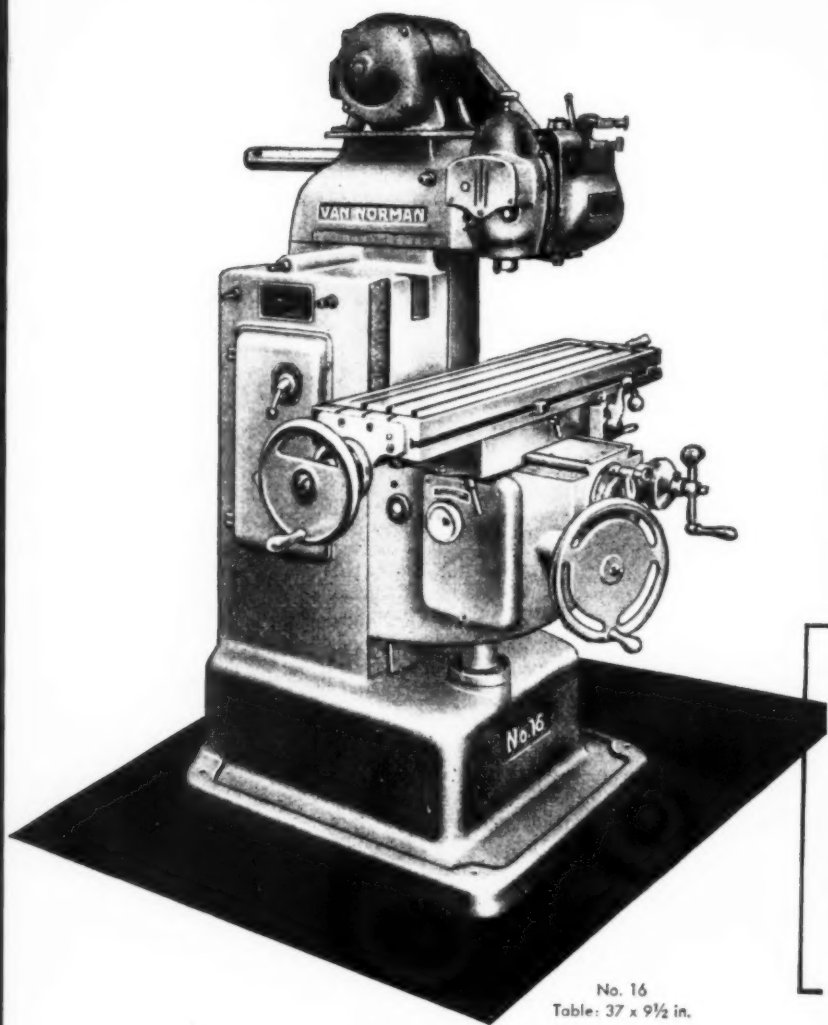
The direct reading Gear Box is tongued, grooved and bolted to front of bed and is the enclosed type to exclude dirt and chips from gears. Wide gears and heavy shafts are used with Ball and Bronze Bearings throughout. Thirty-six (36) changes of threads and feeds are obtained, and in connection with the Reverse Gears, either right or left hand threads can be produced without the use of wrenches.

Machine Tool Co.

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AT MACHINE TOOL SHOW

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SPRINGFIELD, OHIO, U. S. A.



No. 16
Table: 37 x 9½ in.

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FEATURING THE ADJUSTABLE CUTTERHEAD, MOVABLE RAM AND BUILT-IN CONTROLS

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- "Start-Stop" switch on front of knee permits operator to start and stop machine from the front operating position.
- Nine spindle speeds from 95 to 2000 R.P.M.
- Power feed is provided for table longitudinal travel. Nine feeds from $\frac{1}{8}$ " to 16".
- New heavy cutterhead plus new spindle transmission provides greater load carrying capacity.
- Large hand wheels and large dials permit easy cross, vertical and longitudinal adjustments.
- Available with plain or universal saddle.



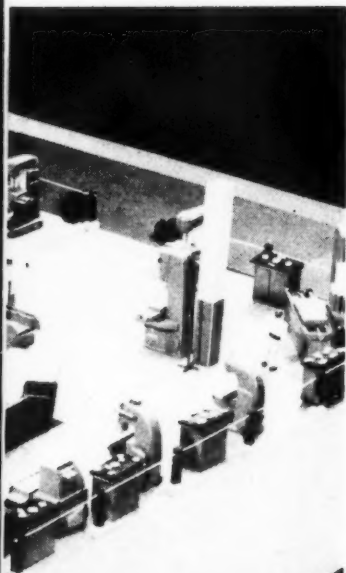
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Machines that mean broader range, greater adaptability at lower operating costs to you. Machines that use all modern cutting tools to maximum efficiency.

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"Stark"

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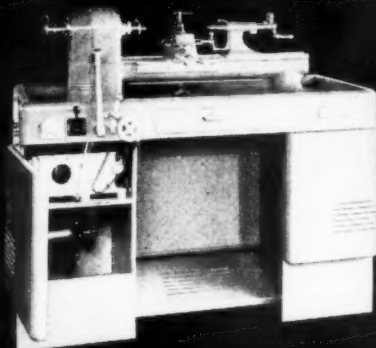
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Instantly variable speeds by convenient hand-wheel in front. Lever moved forward engages clutch; backward applies brake.

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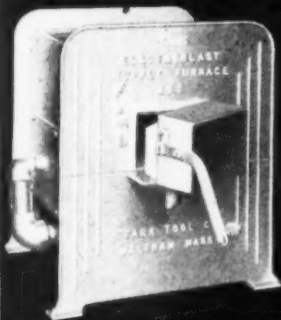
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Stark Motor Drive Unit — Smooth and reliable
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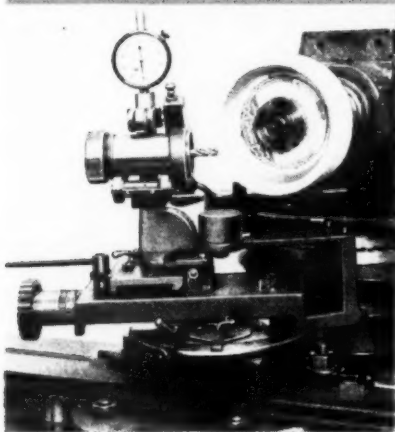
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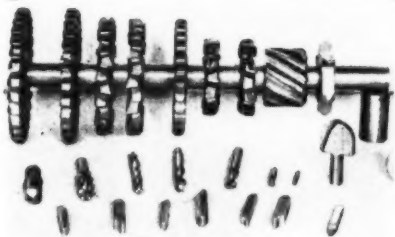
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"Trial and Error" Method is Obsolete



PATENT PENDING



Here are a few standard cutting tools that have been ground on the Radiform into special forms.

Radii can now be formed on spiral fluted end mills and similar rotary cutting tools. You will see pictured at the left the Radiform forming a $3/16$ " convex radius on a $3/4$ " dia. end mill. This attachment on the Radiform with its 24 station indexing head will save you time and money, and give you precision results you had never hoped for.

The Radiform generates forms on most types of cutting tools. Carbide form tools are no longer difficult to grind with a Radiform.

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W. F. MEYERS COMPANY • ESTABLISHED 1888

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PNEUMATICS INCORPORATED

of Plymouth, Indiana, U.S.A.

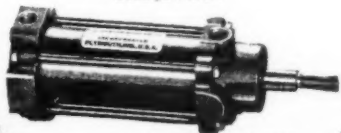
These air cylinders are made to your order with any length stroke you request in any of these bore sizes:

1½, 2, 2½, 3, 4, 5, 6, 8, 10

In ordering please write mounting, bore, stroke and piston rod thread you want.



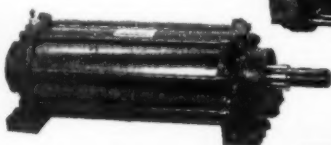
Series "E" Model 1200 Front Flange Mount



Series "E" Model 1300 Rear Flange Mount



Model 5213 Hand Lever Operated Four Way Air Valve



Series "E" Model 1500 Foot Mount

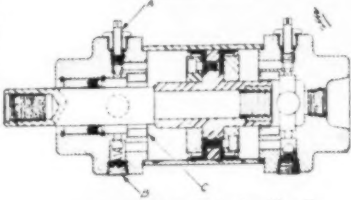


Series "E" Model 1100 Trunnion Mount



Model 5222 Palm Operated Four Way Air Valve

These valves are made to operate double acting air cylinders. They have ½" pipe thread inlet and outlet air ports. They have full size air passages without restrictions that permit the fastest action.



Metering Needle
"A" Ball Check
"B" and Bushing
"C" May be added if cushion is requested



Plymouth Model 5422 Pilot Operated 4 Way Valve



Model 5323 Foot Operated Four Way Air Valve



Model 5522 Plymouth Single Solenoid Operated 4-Way Air Control Valve

Write for complete list and information

PNEUMATICS INCORPORATED
OF PLYMOUTH INDIANA

Attend the Production and Machine Tool Show
International Amphitheatre, Chicago, Sept. 17 - 26



Write for Insert No. 90
Illustrating and describing
in detail the World's
Most Complete Drill
Press Line — the
Canedy-Otto line.

THIS *Free* CATALOG
TELLS YOU HOW TO

GET MORE FROM YOUR DRILL PRESS DOLLAR!

Today, your drill press dollar can buy MORE — more production, more service, more speed, more economy, greater ease of operation. Since 1892 we have concentrated on one task — building better drill presses. Today each Canedy-Otto Drill Press has a solid background of 55 years experience gained in close cooperation with the metal working industry. Write today for insert No. 90, describing and illustrating the World's Most Complete Drill Press Line. No other manufacturer offers as complete a line, none offers greater value. Before you invest, investigate the Canedy-Otto line.

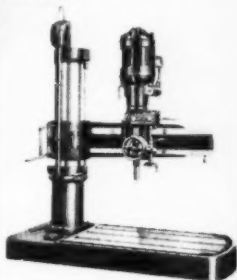
Attend the PRODUCTION
and MACHINE TOOL
SHOW. International
Amphitheatre, Chicago,
Sept. 17-26

CANEDY-OTTO



**2 SPEED — 31" STATIONARY
HEAD FLOOR DRILL**

An ideal general purpose drill, equipped with back gears and power feed, ratchet type lever feed, wheel feed and automatic stop. 8 Spindle speeds and 3 rates of power feed. Available with either tight or loose pulley drive for counter-shaft power take-off, or electric Vee belt, or geared motor drive. Rugged one-piece semi-cast steel construction. Accurately machined table and base. Table pivots, swings 360° around column. Capable of close precision work.

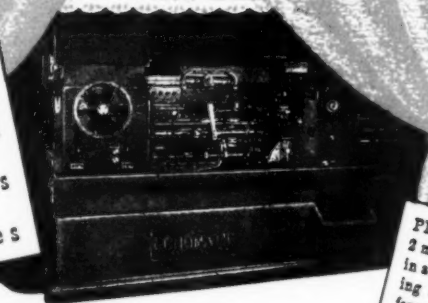


**9-12 SPEED MOTOR
SPINDLE RADIAL DRILL**

1-1/2" capacity, with 3 ft., 4 ft. and 5 ft. arm, 9" and 11" column. Simply designed, easy to operate, capable of closest precision work. Powered by 1 H.P. constant horsepower motor, magnetically controlled, available in two types — 1200 R.P.M. and 1800 R.P.M. Four rates of power feed. Provides an efficient and convenient method of tapping. Equipped with automatic trip for predetermined depth drilling. Has coolant pump mounted directly onto tank of base. Combines all the best features of many larger, more expensive radial drills.

★ New 1 inch
Six Spindle
CONOMATIC
demonstrating

23
Outstanding
Features
16
Innovations
10
Exclusives



PRODUCING
2 mating parts
in an outstanding
novel performance using
24 tools and 6
attachments

CONE presents A NEW CONOMATIC for SHORT, MEDIUM or LONG RUNS

3 ADDED ATTRACTIONS

1. New time-saving carbide tool performance on a 2 1/2" Six Spindle.

2. Interesting, high production, low cost tool demonstration on a 5" Four Spindle.

3. Surprise initial appearance of the new "Multi-Single" Conomatic, an entirely innovative type Cone machine.

SHOW TIME
SEPT. 17-26 - CHICAGO
SHOW PLACE
CONE BOOTH - No. 617

WINDSOR, VERMONT, U.S.A.

CONE AUTOMATIC
MACHINE
COMPANY

1883 GREENERD 1947

Greenerd hydraulic press designs are based on simple principles of engineering. Perfection in design makes them capable of handling the most intricate tasks in — assembling, disassembling, bending, straightening, molding & forming, die testing, as well as broaching, tool room & special machine work.

"GREENERD" World Standard for 65 years



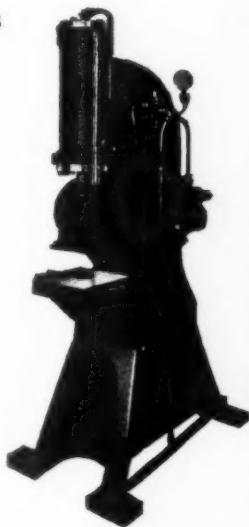
**MODEL 40
12 TON
HAND OPERATED**

An arbor
press for every
need, varying from
1/4 to 30 tons capacity,
both hyd. and
mechanical types—

Send for Catalog G

Sold through local
dealers throughout
the manufacturing
world.

Let our Engineering
Dept. help you with
your problems.



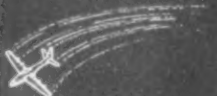
**MODEL H 60
15 TON
HYDRAULIC**

GREENERD ARBOR PRESSES

NASHUA, NEW HAMPSHIRE, U.S.A.

EST. 1883

FUNDAMENTALLY
NEW DESIGN
for
UNEQUALLED
PERFORMANCE



The matchless speed and power of the Jet plane results from aircraft engine design that is fundamentally different.



Fluorescent light means perfect light of very low cost . . . the result of design that departs from an established standard.



A new engineering approach to a well known requirement is the Wire Recorder.



Design of the rocket provides a drive of unequalled power for the shell or projectile.



In the Diesel-powered Streamliner, a fundamentally different approach to locomotive design provides the smoothness that makes these trains first choice everywhere.

Every Rockford Hy-Draulic Machine Tool, because of the fundamental design feature of Hy-Draulic Drive and Feeds, will provide outstanding performance, measurable in terms of better work and faster work at lower cost.

ROCKFORD

Hy-Draulic MACHINE TOOLS

PIONEER DESIGN . . .

Almost twenty years ago Rockford Machine Tool Co. introduced its first Hy-Draulic machine. The years since then have been a period of constant engineering research and analysis to develop the very best in equipment to meet metalworking's shaper and planer requirements. This experience in the application of hydraulic design to shapers, planers, slotters, and shaper-planers . . . an experience that has been exclusively Rockford's for almost twenty years . . . makes it possible to offer an engineering and production capacity in Rockford's particular field, that can be equalled by no other organization.

WHY Hy-Draulic DESIGN . . .

The reciprocating ram action of the shaper and slotter, or the similar table action of the planer, represented always a difficult problem in mechanical machine design. Hydraulics provided the most logical method of converting the rotary motion of an electric drive motor into the reciprocating motion of a ram or table. Characteristically Hy-Draulic drives and feeds are smooth and quiet; cutting stroke speeds and feeds are easily and infinitely variable; stroke lengths may be quickly set as required.

IS YOUR PRESENT EQUIPMENT OBSOLETE?

Obsolescence can no longer be measured only in terms of machine accuracy. While accuracy is important, TIME is the biggest factor today. How much machine time, how many costly man hours does your present equipment use up unnecessarily? Check set-up time and machine time on any Rockford Hy-Draulic Machine Tool against a similar machine now in use in your shop. In a competitive market, will you be able to produce quality work at a profit?

SEE ROCKFORD Hy-Draulic MACHINES at the SHOW

The new Rockford machine tools, now being announced, represent the first major advancement in overall design since before the war. Whatever your present equipment may be, see the new Rockford machines at the show . . . on display at Booth 526.

526

ROCKFORD MACHINE TOOL CO.
Rockford Illinois

Hy-Draulic

RAM TYPE SHAPERS



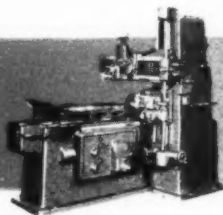
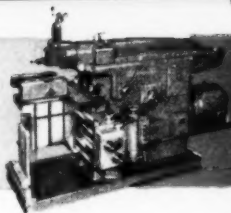
Hy-Draulic

OPENSIDE SHAPER



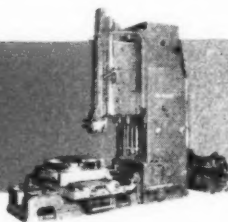
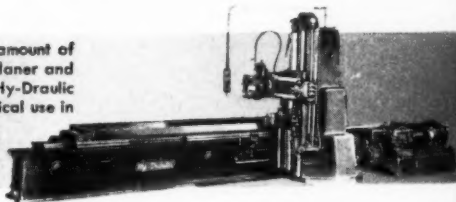


RANGE . . . Rockford Hy-Draulic Ram-Type Shapers offer full capacity range. Cutting strokes may be set from maximum down to fractional divisions of an inch, with precision accuracy in stroke length maintained. Cutting stroke speeds are infinitely variable.



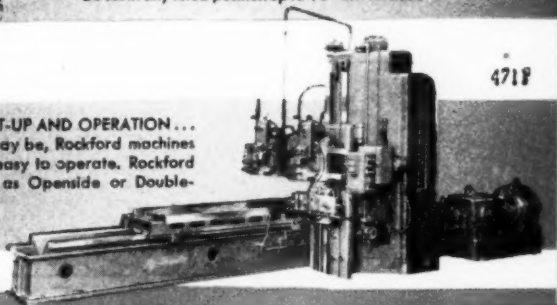
SOUND ENGINEERING . . . It is the belief of Rockford engineers that the Rockford 28" Ram-Type Shaper represents the practical limit for Ram-Type Shaper operation. To meet the requirements of larger shaper work, the new Rockford 36" Hy-Draulic Openside Shaper is offered to metalworking.

SPEED . . . Since a considerable amount of work is halfway in size between planer and shaper capacities, the Rockford Hy-Draulic Shaper-Planers have a wide practical use in many shops. They offer the speed of the shaper with the rigidity of planer construction.



Hy-Draulic DESIGN MEETS ANY REQUIREMENT . . . The vertical travel of the slotted ram provides no problem in design when the actuating assembly is hydraulic. All the advantages of Hy-Draulic construction are found in the Rockford Hy-Draulic Slotters. Ram may be set in any tilted position up to 10° off-vertical.

DEPENDABILITY—EASE OF SET-UP AND OPERATION . . . Whatever the size or weight may be, Rockford machines are responsive to control and easy to operate. Rockford Hy-Draulic Planers, are built as Openside or Double-Housing types.



Hy-Draulic

PLANERS



Hy-Draulic

SLOTTERS



Hy-Draulic

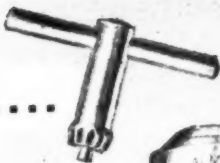
SHAPER-PLANERS



Almond

DRILL CHUCK....

TRIPLE JAW



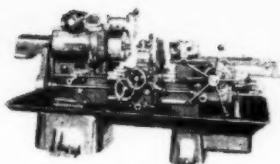
When you pick a drill chuck . . . pick a pioneer. ALMOND DRILL CHUCKS have been leaders in the field since 1872.

ALMOND DRILL CHUCKS are dependable for extreme accuracy and maximum gripping power.

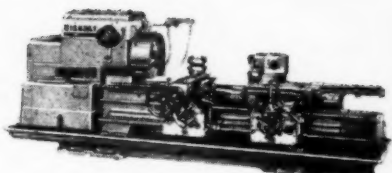
ALMOND DRILL CHUCKS are furnished in nine sizes with capacities from 3/16" to 1". They are made for heavy and light duty types with taper or threaded arbor hole—to fit all machine tools and portable tools.

Write today for full details and specifications.

T. R. ALMOND MANUFACTURING COMPANY
ASHBURNHAM MASS. U. S. A.



RAM TYPE TURRET LATHES



SADDLE TYPE TURRET LATHES

There's ONE Best Way for every job!

Are you seeking better ways of doing old jobs? Or does a new product create new problems in saving machining time and cost?

If you have these or other questions in the field of metal turning and surface-finishing, get authoritative answers from men who know. Bring your questions to the Gisholt "Round Table."

At Gisholt, the "Round Table" does not exist in fact—but in effect. For here, to assist you in the newest methods, is a concentration of skill and experience in producing round and semi-round parts—more extensive, we believe, than will be found anywhere else.

With its broad line of machining, surface-finishing and balancing equipment, Gisholt specialists can bring more knowledge to bear on your specific problems. And you may depend on their unbiased judgment.

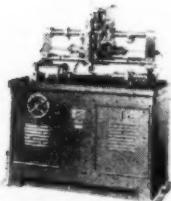
GISHOLT MACHINE COMPANY

Madison 3, Wisconsin

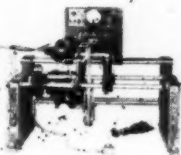


THE GISHOLT ROUND TABLE

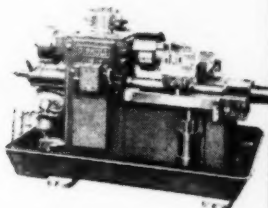
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.



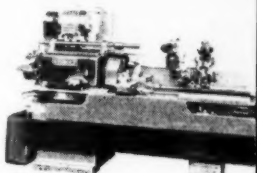
SUPERFINISERS



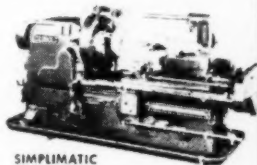
BALANCERS



HYDRAULIC AUTOMATIC LATHES



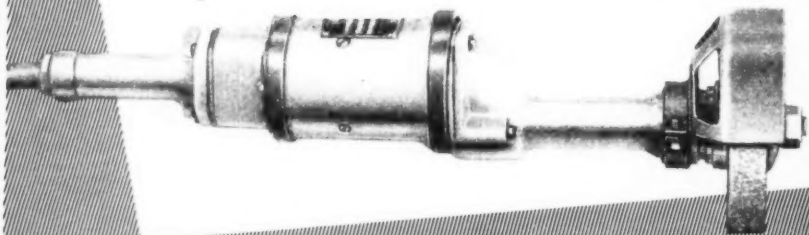
FASTERMATIC



SIMPLIMATIC

Introducing

CP SUPER



Lighter Weight—as low as 3 pounds per horsepower
Faster Cutting—no speed sag under load

CP Super Cycle is the latest CP development in electric tools. The ratio of motor weight to horsepower is the lowest ever built into a portable tool. Super Cycles are easier to handle . . . can be located on work more quickly . . . are less tiring to hold. Best of all, they work at full speed under all loads.

In the CP Super Cycle grinder, the speed does not sag when the operator bears down . . . it removes more metal at less cost than

any other type of grinder.

Maintenance is remarkably low. The motor, operating on 360 cycle, 3-phase, 220 volt current, is of the squirrel cage induction type . . . has no brushes to replace . . . no armatures to burn out.

The complete line of Super Cycle tools includes grinders, sanders, polishers, buffers, screw drivers, drills, nut runners, tappers, in a wide range of speeds. Write for data.



CYCLE ELECTRIC TOOLS

Why the Super Cycle Grinder Cuts Production Costs

maintains full speed under load

- ... no sag in speed when operator bears down.
- ... operating speed remains constant during life of tool.

abrasive wheels always run at most efficient speed

- ... more output per man hour.
- ... prolongs wheel life.

lighter than any other type of portable grinder

- ... weighs but 3 pounds per horsepower.
- ... handles easily, with less operator fatigue.

low maintenance cost

- ... no brushes to replace, no armature to burn out.



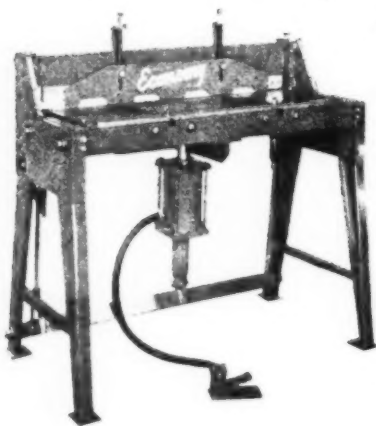
**CHICAGO PNEUMATIC
TOOL COMPANY**

General Offices: 8 East 44th Street, New York 17, N. Y.

ELECTRIC TOOLS • AIR COMPRESSORS • PNEUMATIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

New Economy



Air Hydraulic Power Shear

A new development of the well known ECONOMY Shear, comprising an air hydraulic power unit of our own, designed especially for power shear operation.

Imparts the smoothness of hydraulic power to air operated equipment. Can be adjusted to 75 strokes per minute. Can be connected to any air supply line. $\frac{1}{4}$ " pipe required. Operates on 90 to 100 lb. air pressure, and will shear 36" wide, 16 gauge soft steel.

A precision built machine designed for continuous satisfactory operation.

See it in operation at Booth 571 at the National Machine Tool Show.

ANNOUNCING

The new Economy Hydraulic Press Brake, of new design with new features. Capacity 52", 14 gauge. Early delivery. See it in operation.

ACME EQUIPMENT CO., INC.

126-128 S. CLINTON ST.

CHICAGO 6, ILLINOIS

Two NEW Precision OLIVER GRINDERS

These template controlled precision grinders were developed for sharpening single point cutting tools efficiently and accurately by production methods.

On the Oliver grinders, the shape does not complicate the grinding operation as all flats and radii are ground in the one operation and the operation is controlled by a master Template.

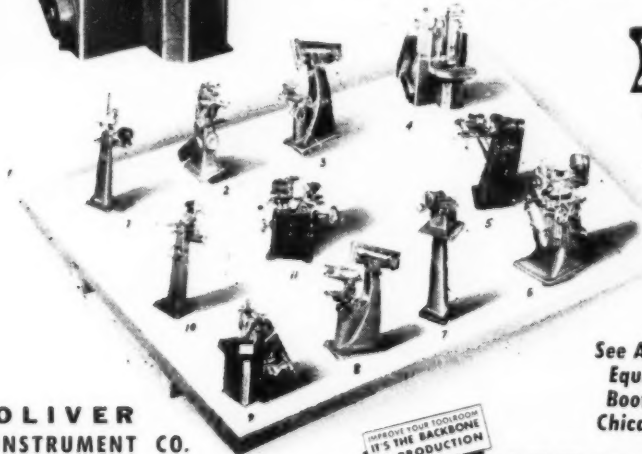
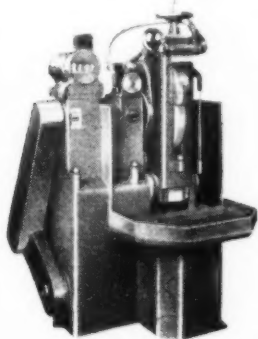
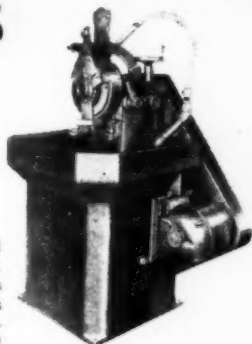
The 10" Machine grinds on the face of a 10" cap wheel and will sharpen any tool up to 1"

wide x 1 1/4" high and from 0 to 20° clearance. Special shapes, odd sizes and various combinations of clearances are available with special tool

holders and adaptors. The 10" machine may be equipped with diamond wheels.

The 20" machine grinds on the periphery of a 20" wheel and is powered by a three horsepower motor, providing sufficient power for the heaviest cuts.

It has a capacity for tools up to 1 1/2" wide x 1 3/4" high and from 0 to 20° clearance.



**OLIVER
INSTRUMENT CO.**
1408 E. Maumee St
Adrian, Mich.

**OLIVER
OF
ADRIAN**
PRODUCTS

See All Oliver
Equipment
Booth 435
Chicago Show

IMPROVE YOUR TOOLROOM
IT'S THE BACKBONE
OF PRODUCTION

**OLIVER
OF ADRIAN**

AUTOMATIC DRILL GRINDER
TOOL & CUTTER GRINDER - DRILL
HOLDING GRINDER - TEMPLATE
TOOL GRINDER - PAIR & MOUNT
GRINDER - GRINDING WHEEL

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

1

MOTOR TOOL *LIVE* CENTER

WILL *Outlast* A BASKETFUL
OF *Ordinary Centers*

Here's Why!

You no longer have to guess whether you are overloading MOTOR TOOL Live CENTERS. When the load is too great a RED BAND around the spindle disappears into the housing. You can see at a glance when overloading occurs.

This is an 'exclusive feature, developed by MOTOR TOOL, that cuts MOTOR TOOL Live CENTER repairs to practically nothing—immeasurably INCREASES their life—and puts an end to burnouts, breakdowns and work spoilage.

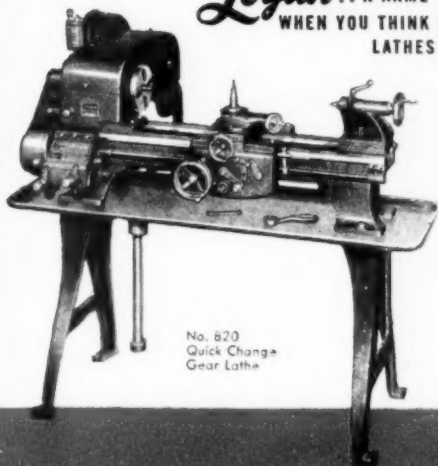
Write
for NEW
Descriptive
Folder

MOTOR TOOL MANUFACTURING CO.
METAL CUTTING TOOLS

7773 CORTLAND AVENUE • DETROIT, MICHIGAN

*Make it a Rule
to Call Motor Tool*

Logan... A NAME TO REMEMBER
WHEN YOU THINK OF BETTER
LATHES AND SHAPERS.

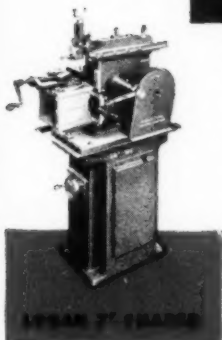


No. 820
Quick Change
Gear Lathe

See the
Logan Lathes
at the
Production
and Machine
Tool Show,
International
Amphitheatre,
Chicago,
September
17-26.

Adaptability

Another Reason Why
LOGAN Lathes Serve
Many Industries



• The Logan Lathe's reputation for adaptability has been earned in many industries, in exacting tool room work, and on a variety of production operations. The Logan ball bearing spindle, for example, has a speed range of 30 to 1450 rpm. High speed carbide cutting tools can be used to full advantage, yet the lathe is equally adaptable to slow speed work. The wider range of Logan spindle speeds assures the most effective rpm for light or heavy cuts, as well as for machining widely different materials such as steels, cast iron, non-ferrous metals, and plastics. Rugged, precise construction throughout, plus Logan advanced design features assure lasting accuracy. A complete line of lathe accessories and attachments further increases the adaptability of Logan Lathes. Write for full information.

SPECIFICATIONS COMMON TO ALL LOGAN LATHES... swing over bed, 10 1/2" ... bed length, 43 1/4" ... size of hole through spindle, 2 1/2" ... spindle nose diameter and threads per inch, 1 1/2"—8 ... 12 spindle speeds, 30 to 1450 rpm ... motor, 1/2 hp, 1750 rpm ... ball bearing spindle mounting ... drum type reversing motor switch and cord ... precision-ground ways, 2 V-ways and 2 flat ways.

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LOGAN ENGINEERING CO. CHICAGO 30, ILLINOIS

IN SPACE 5 at the
MACHINE TOOL
SHOW...

Eleven NORTON MACHINES 8 GRINDERS 3 LAPPERS

SEE these very latest developments
in grinding and lapping machines
in action at the Dodge-Chicago plant.

You'll find that the design keynote
for all eleven Norton machines,
whether they are for the production line
or for the tool room,
is CONVENIENCE —

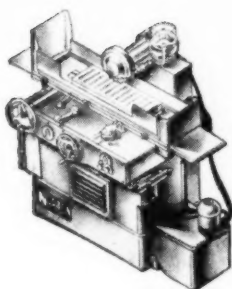
controls and adjustments grouped
for easy, convenient operation;

mechanisms easily accessible
for convenient maintenance service.

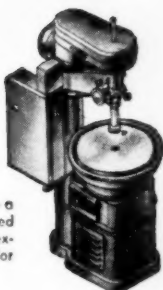
If you can't get to Chicago
let us send complete information
on these new Norton machines —
the latest word in grinding and lapping
— no obligation, of course.

**NORTON COMPANY
WORCESTER 6, MASS.**

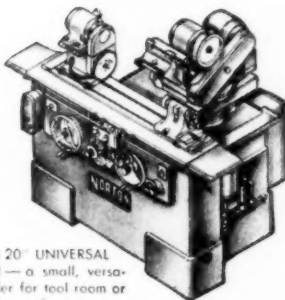




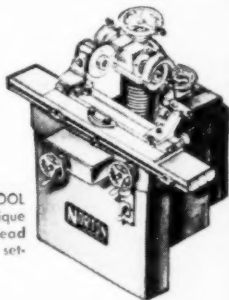
THE 8" SURFACE GRINDER — a speedy, high precision machine for production jobs or tool room work.



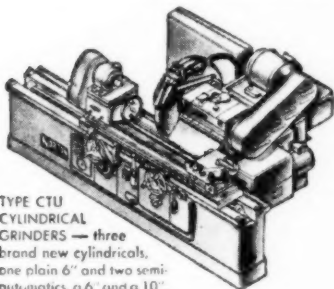
THE SEAL-O-LAP — a unique lapper designed for producing an extremely flat surface for rotary seal devices.



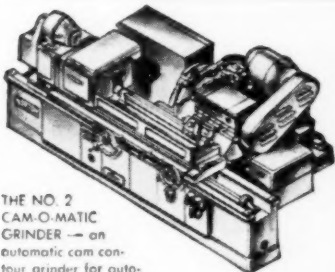
THE 10 x 20" UNIVERSAL GRINDER — a small, versatile grinder for tool room or production work.



THE NO. 20 CUTTER AND TOOL GRINDER — a unique tilting wheel head simplifies many set-ups.



TYPE CTU CYLINDRICAL GRINDERS — three brand new cylindricals, one plain 6" and two semi-automatics, a 6" and a 10".



THE NO. 2 CAM-O-MATIC GRINDER — an automatic cam contour grinder for automotive type camshafts.

Also

THE NO. 2 BURAWAY GRINDER for convex single point tools
THE NO. 16 FC LAPPER — a universal machine for flat or cylindrical work
THE SIMPLEX SURFACE FINISHING MACHINE for small cylindrical work

SEE IT AT THE MACHINE TOOL SHOW

**NEW!
SENSATIONAL**

Electronic-Hydratrol

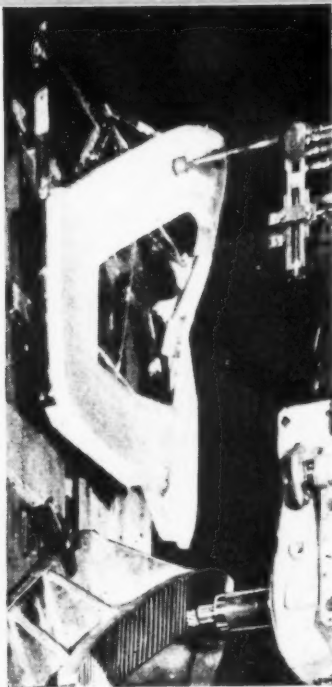
E - LATHE - 16" and 18"

- Maximum Spindle Speed of 1800 RPM. Minimum spindle speeds down to 1 RPM.
- Adequate overall range at sustained horsepower for general purpose requirements.
- Electronic and hydraulic Controls, plus all the outstanding features of our regular Hydratrol Lathes.
- Infinite speed variations can be made over the full range, with the spindle running.

SEE IT OPERATE AND YOU'LL WANT ONE!

***L*ehmann MACHINE COMPANY**

**NO MACHINE TOO BIG
TO BE TURCHAN-EQUIPPED**



FOR DUPLICATING DIES,
MOLDS, PATTERNS OR
ORIGINAL FORMS FROM HARD
OR SOFT MODELS WITH
FIDELITY, ACCURACY AND
EXTREME RAPIDITY

ON

MILLS, LATHES, SHAPERS,
PLANERS, GRINDERS, HIGH
SPEED HEADS OR
ANY MACHINE TOOL

WRITE FOR
COMPLETE
INFORMATION

TURCHAN FOLLOWER MACHINE CO.

*Oldest Manufacturer of Hydraulic Duplicating
Attachments for Machine Tools*

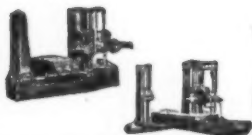
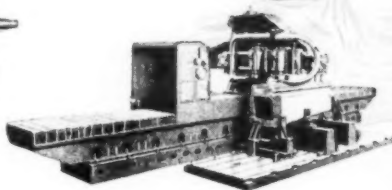
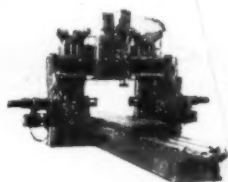
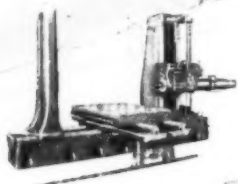
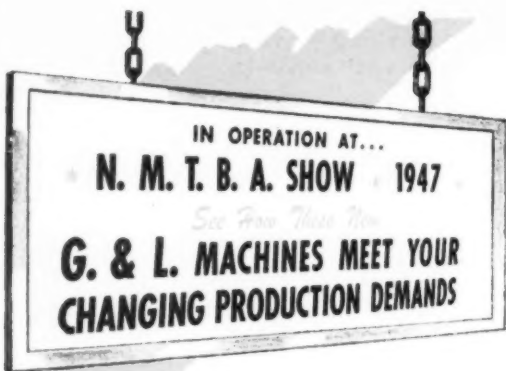
8265 Livernois

Detroit 4, Mich.

Turchan

FOLLOWER MACHINE

**NO MACHINE TOO SMALL
TO BE TURCHAN-EQUIPPED**



Giddings

3 TIME SAVING, PROFIT PRODUCING MACHINES Supplementing THE WORLD'S MOST COMPLETE AND VERSATILE LINE OF HORIZONTAL BORING, DRILLING AND MILLING MACHINES . . .

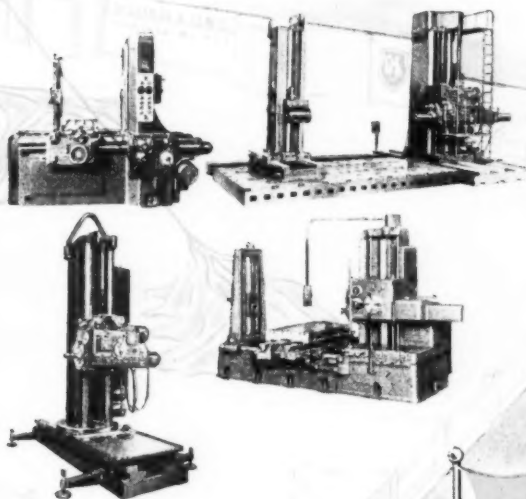
The No. 00-T — Small in Range, but a Giant in Producing or Reproducing Intricate Parts — a Table Type Machine of Great Accuracy.

The No. 300-T — The Answer to Your Requirements for Medium Size Work — has all the Flexibility of the Famous 30 Series Table Type Machine.

The FT-110 — The Better Way to Finish Bearing Surfaces on Machine Tool Elements.

All G.&L. machines are designed for greater accuracy, operating at higher feeds and speeds, producing more at lower costs.

Visit Booth 315 — Ask our Sales Engineers to Assist You in Selecting the Proper Machine to Meet Your Problems.



Where? CHICAGO, ILL.

When? SEPT. 17-26

At the G. & L. Booth

NUMBER 315

& Lewis MACHINE TOOL CO

144 DOTY STREET

FOND DU LAC, WISCONSIN

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

cut production costs with a **SHOPLIFTER**

- **Light, Compact**
- **Easily Moved About**
- **One-Man Operated**
- **Wide Range in Application**
- **Saves Production Time**

In handling dies and heavy fixtures; stacking barrels, boxes, etc.; loading and unloading trucks

Specifications

Type—D

Capacity—500 lbs.

Overall height—72"

Platform lift—54" above floor level, lowers to within 5" of floor

Baseframe—24" wide x 33" long

Platform—24" x 24", steel plate

Entire frame of machine of structural steel, electrically arc welded throughout

Basewheels—4" diameter, iron wheels

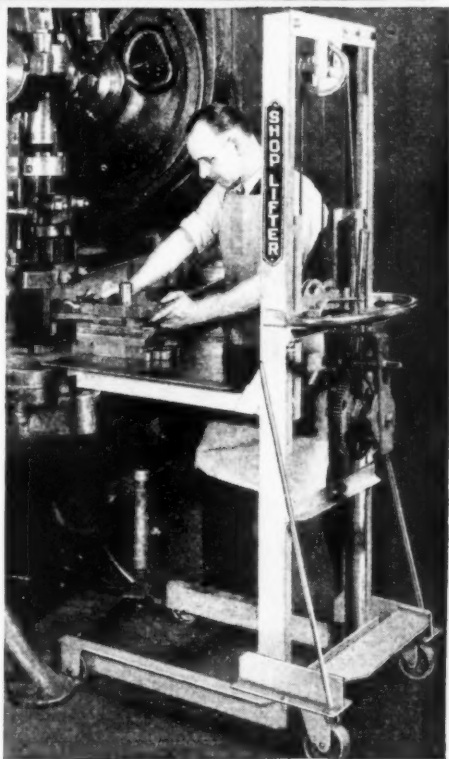
Crank up and down hoist unit

Two swivel casters and two stationary wheels with push bar furnished

Painted olive green finish

Weight—250 lbs. (approx.)

Heavier capacities up to 5,000 lbs. also available. Write for details.



Prompt Delivery

Price \$157.50. Full Freight Allowed... Foot Operated Floor Lock, \$10.00 Extra

2635 West Van Buren Street, Chicago 12, Illinois

ECONOMY ENGINEERING CO.

Announcing ...

DoALL'S OWN Separate Machine Tool SHOW

SEPTEMBER 15 TO 20
AT DES PLAINES, NEAR CHICAGO

*free round trip transportation from
Chicago Dodge Plant or International Amphitheater*



HERE'S YOUR TICKET (More Available on Request)
FREE ROUND TRIP TO DoALL CO., DES PLAINES, ILL.
Get bus schedules at DoAll booth 37 Machine Tool Show or booth 107 at International Amphitheatre Show. Upon arrival at DoAll, Des Plaines, Ill., you will be reimbursed for bus or train fare from Chicago.

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COMPANY _____
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3 SIMPLE STEPS TO *Better* SQUARE HOLES

BORING BARS, CUTTER HEADS, TOOL HOLDER
with STURDY SQUARE HOLED SLEEVES



1 Drill and ream the hole in the part to size. Sturdy Square Holed Sleeves are furnished to the size shown in the specification table or they may be ordered with .015" grinding stock so that you can grind your Sleeve to fit.

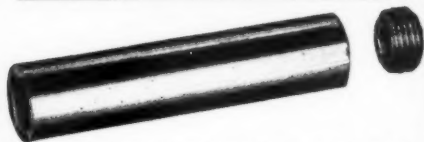


2 Sweat or press Sleeve into place. If the Sleeve is longer than the diameter of the bar, the Sleeve should be set flush with the OD of the bar at the threaded end and the excess at other end ground off.



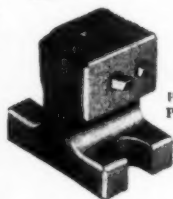
3 Drill and tap for set-screw. This set-screw is not furnished with the Sturdy Square Holed Sleeve although the back-up screw is furnished.

OVER 30,000 IN USE

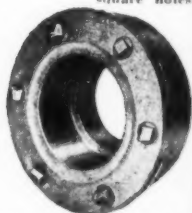


One of the most difficult problems in tool making can be solved easily and quickly with Sturdy Square Holed Sleeves. The perfection of broached square holes can be had in boring bars, milling cutters and many other applications at a small fraction of the cost of imperfect hand-made square holes. The Sturdy Square Holed Sleeve consists of a round sleeve with a perfectly square hole broached through the center. This hole is tapped at one end to receive a back-up screw which is furnished with the Sleeve. The Sleeve can be sweated or pressed into a drilled and reamed hole to make a perfectly square accurate hole in a very few minutes.

The Sturdy Square Holed Sleeve will save you many hours and many dollars in the making of boring bars, milling cutters and other tools requiring square holes.



Patents Pending



A tool holder made with Sturdy Square Holed Sleeves. Tool holders of all types can be made more quickly and at lower cost this way. This milling cutter is made from a simple blank turned to size on a lathe with Sturdy Square Holed Sleeves sweated in to hold standard tool bits.

Some Territories Still Open to Jobbers

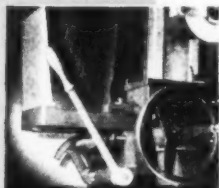
STURDY BROACHING SERVICE
23514 Telegraph Rd. Detroit 19, Mich.

Write for Literature

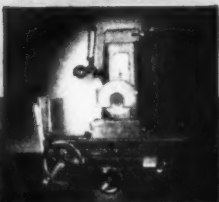
ANNOUNCING

A *New* BOYAR-SCHULTZ SURFACE GRINDER For BENCH or FLOOR USE

Designed to supply the need for an accurate, easy operating, sturdy Surface Grinder capable of performing with full precision on smaller work . . . Tools, Dies, Gauges, Fixtures. This new Boyar-Schultz machine will grind to close tolerances. It is sturdy and has long wearing qualities found in larger surface grinders. We highly recommend it for tool room use, for the bench or as a floor model. Its size and other outstanding features make it "The Tool Makers Personal Grinder."

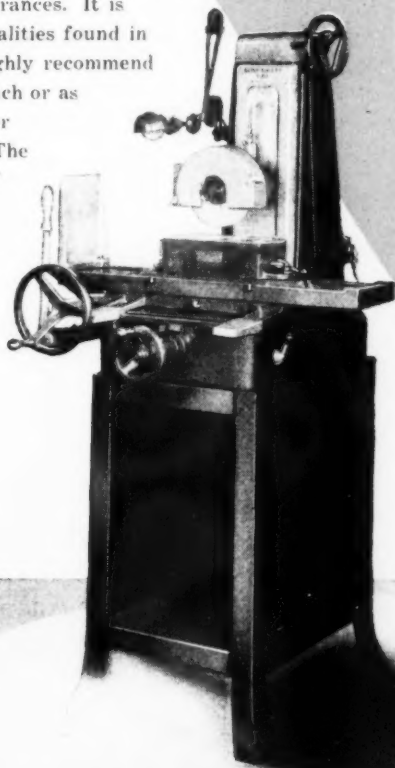


RAPID TRAVERSE TABLE LEVER
May be used instead of hand wheel for faster, easier operation and less fatigue.



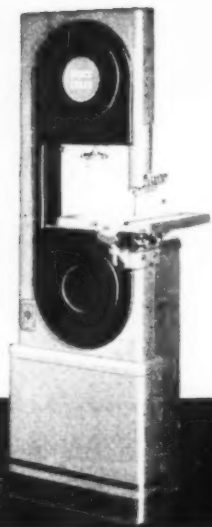
FOR BENCH USE

Its size permits mounting on tool makers bench where it is always handy and quickly available for so many smaller grinding jobs required by tool makers.



Write for New Circular—Specification and Low Price

BOYAR-SCHULTZ CORPORATION
2108 WALNUT STREET • CHICAGO 12, ILLINOIS



**FOR SPEED
AND ACCURACY**

**IN
CUTTING PRACTICALLY
ANY MATERIAL**

BOICE-CRANE
Series No. 2300
14" BAND SAW

Operates at higher speed—4,400 blade feet per minute. Smoother and faster cutting. Sturdy enough for foundries and production. Accuracy to spare for tool and die work, like contour sawed cams, dies, and punches; ideal for experimental laboratories and pattern shops.

Single and 8-speed back-gearred models for cutting practically any material. Clears 8 $\frac{1}{2}$ " under the guide.

One-piece welded steel frame has tremendous strength. Wheels and blade, except at cutting point,

are entirely enclosed. Cabinet type base has sealed-off motor compartment. High safety rating.

Blade guides adjust by a single control, and with full safety, even when machine is running. Close balance and tight, but strong Textolite wheels permit twice the speed of other 14" machines. Less vibration, and longer bearing life. Saws wood two to four times faster. Often pays for itself in 3 to 6 months.

SPECIFICATIONS:

Sawing Capacity: Blade to guard—13 $\frac{1}{2}$ ", 27" dia. work. Guide to work table—8 $\frac{1}{2}$ ".

Table: Tilts on Double Trunnions. Size 15"x15 $\frac{1}{2}$ ".

Height Overall of Floor Model: 67".

Blade Widths: 3/16", 1/4", 3/8", 1/2" and 3/4".

Length of Blade: 98".

Wheels: Disc, Moulded Textolite, 14" dia. 1" face.

Bearings: Grease-sealed Ball Bearings.

FOR A GUARANTEE OF SATISFACTORY SERVICE

buy only from long established manufacturers who SPECIALIZE in producing power tools, rather than making them a sideline.

WRITE FOR FREE LITERATURE

BOICE-CRANE COMPANY

936 Central Avenue

Toledo 6, Ohio

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SAW JOINTERS • THICKNESS PLANERS • TILTING ARBOR SAWS
SPINDLE SANDERS • SPINDLE SHAPERS • BAND SAWS**



SEE 'EM AT THE SHOW!

Don't Miss Booth 126
SEE THE WHOLE ABRASIVE LINE
IN ACTION!

A NEW MULTI-MICRO FINISHER

for grinding tools, dies and similar parts of tungsten carbide—offers revolutionary stock-removing qualities and high finish on bores and short outside diameters.

A NEW GRADUATING MACHINE

for automatically graduating dials or hand-wheels in inches or mm; 1 1/4" to 20" diameter, with graduations on bevels from square to 45° angle.

A NEW M3S SURFACE GRINDER

With ELECTRONIC CONTROL

that provides variable speeds for wheel and table feeds. Ideally suited for grinding with crush-dressed wheels.

A NEW TOOL & CUTTER GRINDER

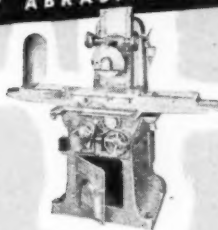
for cutters, reamers, end mills, etc. Simple and extremely convenient.

AND THESE FAMOUS ABRASIVE GRINDERS



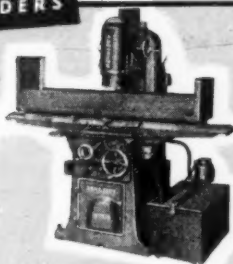
No. 1 1/2 Hand Feed Surface Grinder

Work Capacity: 15" long x 10" wide x 12" high. Motor mounted directly on spindle gives maximum cutting power. For precision grinding—dies, gauges, flat work, etc.



No. 3B Automatic Surface Grinder

Work capacity: 24" long x 8" wide x 12" high. Accuracy, durability and safety are built into this versatile grinder. Full automatic feeds increase production.



No. M-34 Vertical Spindle Surface Grinder

Work capacity: 24" long x 8" wide x 12" high. Motorized spindle (5 H.P.) eliminates belting, provides more power at cutting point. Complete with automatic feeds and wet grinding attachment.



• WRITE FOR BULLETINS

**ABRASIVE
 MACHINE TOOL CO.**

EAST PROVIDENCE 14, RHODE ISLAND

ABRASIVE

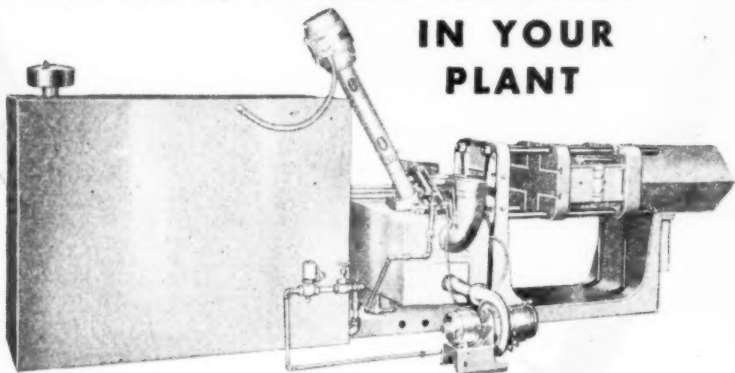
ACCURACY BOOSTS PRODUCTION

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NEW

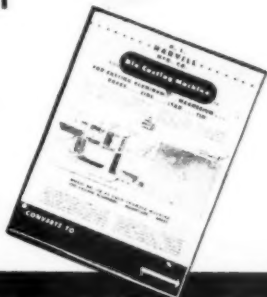
HARVILL DIE CASTING MACHINES

**CUT COSTS, INCREASE PRODUCTION
IN YOUR
PLANT**



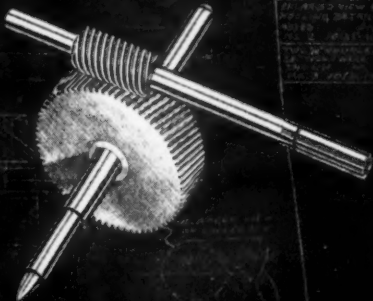
**Write for case histories and full
cost cutting facts today!**

Hundreds of Harvill machines are in use today . . . saving money and speeding production. There is a size and type for every use . . . to cast zinc, tin, lead, aluminum, magnesium and brass alloys. Write on company letterhead for full facts!



H. L. ^{RED} HARVILL MFG. CO.
CORONA, CALIFORNIA

GET THE *BEST* SOLUTION TO YOUR SMALL GEAR PROBLEMS



The G-S Catalog Bulletin describes many different types and applications of G-S Small Gears. Please ask for a copy on company stationery.

SUBMIT THEM TO OUR SKILLED ENGINEERS

If there was ever an organization of Small Gear *specialists*, *this is it!* We've been doing nothing else for more than twenty-five years. During their long, highly specialized experience, our engineers have developed a great number of intricate Fractional Horsepower Gears for many different, and often unique applications. You can capitalize to your profit and advantage on the remarkable Small Gear "KNOW HOW" of this organization. Suggestions, ideas, and cost estimates do not obligate you to buy. May we help you solve a Small Gear problem soon?

GEAR Specialties

Spurs • Spirals • Helicals • Bevels • Internals • Worm Gearing • Racks • Thread Grinding

2635 WEST MEDILL AVENUE • CHICAGO 47, ILLINOIS

MEMBER OF



WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF FRACTIONAL HORSEPOWER GEARS

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GENERAL OFFICES AND PLANT, CHICAGO, ILL.

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Kinds*

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BRASS
COPPER
ALUMINUM
STAINLESS STEEL
WELDING WIRE

*Complete
Stocks for
Immediate
Shipment*

Central Steel

& WIRE COMPANY

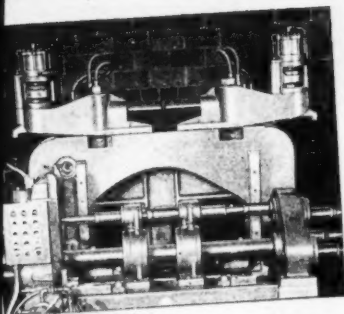
OFFICES AND PLANTS

CHICAGO 80, ILL.
3000 West 51st Street
REPUBLIC 3000

DETROIT 11, MICH.
5035 Bellevue Avenue
PLAZA 6780

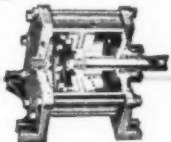
CINCINNATI 16, OHIO
525 Township Avenue
AVON 2230

TELETYPE NUMBERS: CHGO 1269 • DET 33 • CIN 64



Logan Air Cylinder Design Assures Peak Performance and Long Life

- Maximum power without leakage assured by molded composition packing cups, self-adjusted by air.
- Permanent seal around rod provided by "C" ring packing, self-adjusted by air.
- Quicker response obtained through larger ports.
- Higher pressures permitted by more sturdy construction. Heavy duty nickel-chrome iron covers. Bronze bushing supports and aligns piston rod.
- Cylinders can be furnished with cushioning at one or both ends to eliminate shock at end of stroke.



Standard Types and Sizes

LOGAN Air Cylinders are manufactured in standard sizes from 1½" to 24" bore, with any length of stroke to 18 feet. Seven standard mounting types, interchangeable end covers permit combination mountings. For operation at pressures to 150 p.s.i.

WRITE FOR FREE CATALOGS

Write for Catalog S-45 on LOGAN Air Cylinders and Air Valves, Bulletin 371 on Remote Air Operating Spacers, and Bulletin 600 on the new LOGAN R-F-L Unit (air regulator-filter-lubricator)



Logan

Air and Hydraulic Equipment

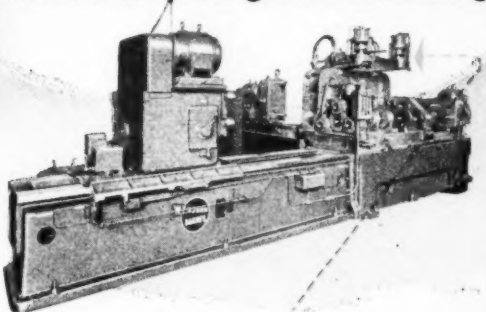
LOGANSPOUT MACHINE CO., INC.

802 Center Ave.
Logansport, Indiana

CIRCUITS • CYLINDERS • VALVES • PRESSURES • FLOW • COOLANTS • PUMPS



"LOGAN" AIR CYLINDERS Provide *Fast, Accurate, Positive* Locking of Engine Block for Precision Boring and Reaming



ARMS OF CLAMPING FIXTURE SWING AWAY FOR LOADING AND UNLOADING SPECIAL MACHINE

The fast-acting, positive operation with follow-up of LOGAN Air Cylinders helps to materially reduce floor-to-floor time and maintain close tolerances on this Diesel engine block job.

Multiple boring and reaming operations are performed simultaneously on a W. F. and John Barnes hydraulic special machine. Ten spindles are carried in three horizontal heads located at the left, right and rear of the work station.

For loading, the two arms of the special air-powered clamping fixture are turned to the sides, permitting the workpiece to be lifted into position. The arms are then swung out over the part, and the operator turns the handle of the air control valve to activate the two LOGAN Air Cylinders, locating and locking the engine block. Tolerances are held to .001" on crankshaft and camshaft bearing seats and .0005" on dowel holes machined in the subsequent operations, due to the accurate holding provided by LOGAN Air Cylinders adapted to the special clamping fixture.

WHERE TO USE LOGAN AIR CYLINDERS

On manufacturing and processing jobs in any industry, LOGAN Air Cylinders can be employed effectively and profitably for an almost unlimited range of applications. They are used for pushing, lifting, pressing, holding, pulling, clamping, forcing and other power movements or combinations of movements in any direction. Cylinder operation is fast, positive and uniform . . . the power is under complete and easy control from any convenient type of air valve.

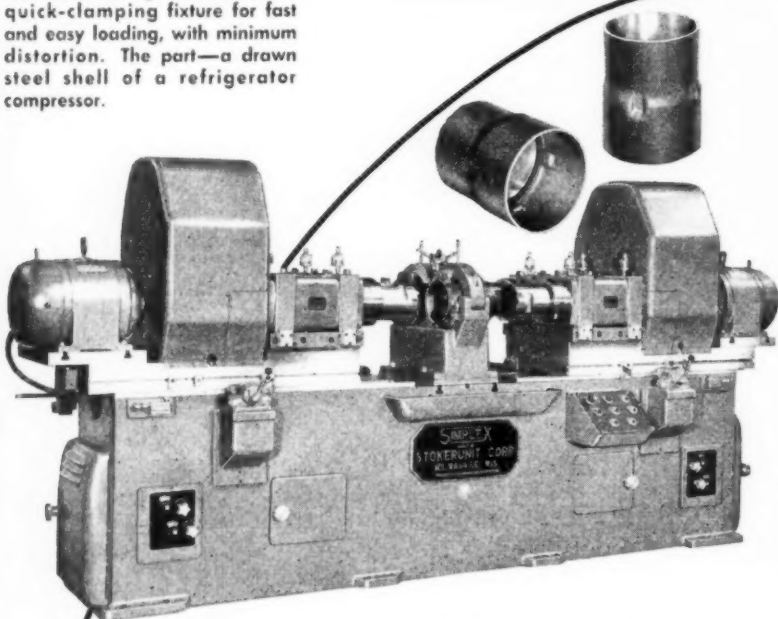
LOGAN AIR CYLINDERS AVAILABLE IN 7 STANDARD MOUNTING TYPE



Interchangeable end covers permit combination mountings

SIMPLEX

A simple and economical method of doing a difficult job—multiple tools for cutting efficiency—a quick-clamping fixture for fast and easy loading, with minimum distortion. The part—a drawn steel shell of a refrigerator compressor.



The machine shown is a SIMPLEX 3U 2-way Precision Boring Machine with four #4 boring heads, each carrying a multiple tool boring quill and an adjustable facing cutter. The parts are clamped in an equalizing fixture designed to hold the work securely with minimum distortion. Two pieces are bored and faced simultaneously, from both ends, reducing the cutting cycle to the time of the longest cut.

Precision Boring Machines

STOKERUNIT CORPORATION

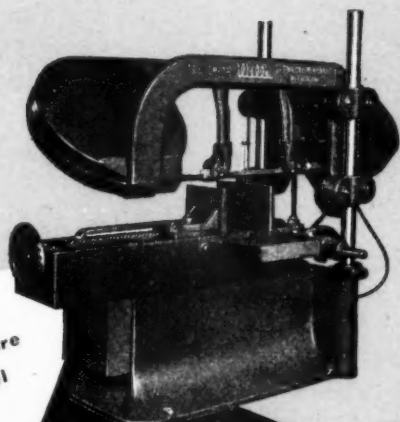
SIMPLEX Machine Tools Division

4530 West Mitchell Street, Milwaukee 14, Wisconsin

Precision Boring Machines, Planer Type Milling Machines and Special Machine Tools

the new WELLS No. 12

Automatic Cutting Cycle
Controlled Blade Pressure
Horizontal Blade Travel
Magnetic Controls
Hydraulic Operation



*fast, accurate
METAL CUTTING
at low cost!*



THE
WELLS No. 8

with wet cutting system

This versatile saw is suitable for production or general utility work. It has a capacity of 8" x 16", rectangular, and 8" dia. rounds. The wet cutting system is a low cost extra that speeds cutting and lengthens blade life.

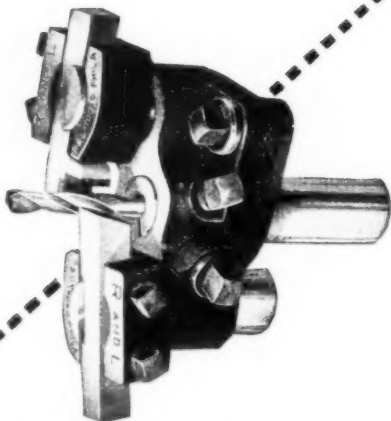
TO OPERATE the new Wells No. 12, just place the stock in the quick acting vise and push the starting buttons. The cut is made automatically with controlled blade pressure to any desired depth. At the completion of the cut the head returns to a predetermined position. You can't beat it for simplicity of operation. Write for details, today.

SPECIFICATIONS

CAPACITY, Rectangular	12" x 16"
Rounds	12 1/2" Ø. D.
Die Blocks	12 1/2" depth; 16" width; Clearance 16" bed to blade
MOTORS	1/2, 3/4, 1, 1 1/2, 2, 3, 4, 5, 6, 8, 10, 15, 20, 25, 30, 40, 50, 60, 75, 100, 150, 200, 250, 300, 400, 500, 600, 750, 1000, 1500, 2000, 2500, 3000, 4000, 5000, 6000, 7500, 10000, 15000, 20000, 25000, 30000, 40000, 50000, 60000, 75000, 100000, 150000, 200000, 250000, 300000, 400000, 500000, 600000, 750000, 1000000, 1500000, 2000000, 2500000, 3000000, 4000000, 5000000, 6000000, 7500000, 10000000, 15000000, 20000000, 25000000, 30000000, 40000000, 50000000, 60000000, 75000000, 100000000, 150000000, 200000000, 250000000, 300000000, 400000000, 500000000, 600000000, 750000000, 1000000000, 1500000000, 2000000000, 2500000000, 3000000000, 4000000000, 5000000000, 6000000000, 7500000000, 10000000000, 15000000000, 20000000000, 25000000000, 30000000000, 40000000000, 50000000000, 60000000000, 75000000000, 100000000000, 150000000000, 200000000000, 250000000000, 300000000000, 400000000000, 500000000000, 600000000000, 750000000000, 1000000000000, 1500000000000, 2000000000000, 2500000000000, 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R and L

RIGHT-- to



←--LEFT in 10 Seconds...

with
**R and L
Turning
TOOLS**

Production savings are important in post-war work. Here is a tool that will save time and money in your shop.

R and L tools increase production by reducing set-up time, by speeding cutting operations, by doing right and left hand turning and by performing several operations simultaneously.

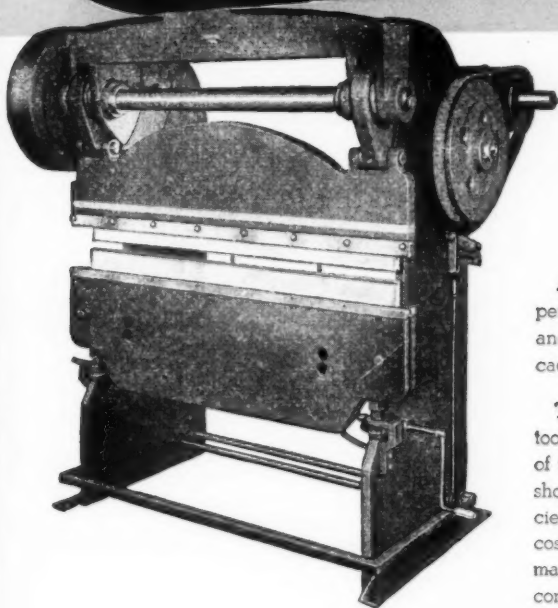
One R and L Turning Tool takes the place of an assortment of 14 separate tools costing 4 times as much! R and L are made in five different sizes . . . and delivery can be made from stock.

Let us send booklet describing R and L Tap and Die Holder, Roller Backrest and Universal Tool Post.

R AND L TOOLS

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Powerful CHICAGO STEEL PRESS BRAKE



TYPE "300"

A POWERFUL, rugged, inexpensive Press Brake, designed and built to the standards of Chicago Steel Forming Presses.

This money-saving production tool will handle 40 to 50 percent of the work done in an average shop. Greater speed, higher efficiency—much lower operating cost—plus the highest quality material and sturdy steel welded construction as in our larger machines.

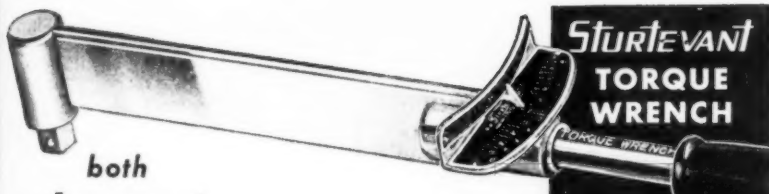
—3 sizes—capacities 10 gage, 4 ft. long; 12 gage, 5 ft. long; 14 gage, 6 ft. long. Powered by 1½ h. p. motor.

We also build special machines for intricate bending operations.

Take advantage of our experience of over 45 years by sending to us any difficult bending problem you have.

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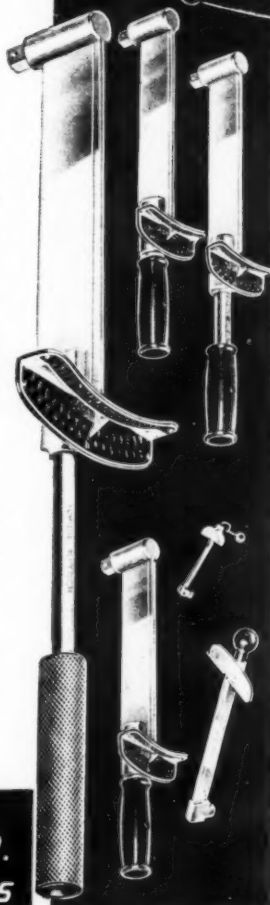
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STURTEVANT WRENCHES come in 2 types, "Standard" or "Sensory," the latter are high speed production torque wrenches—both types are permanently accurate.

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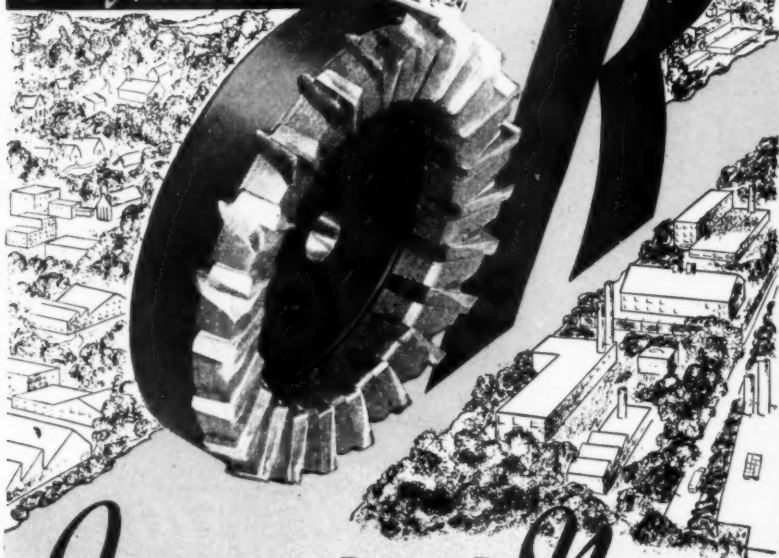
Bulletin 15 describing the STURTEVANT Torque Wrenches in capacities from 0-8 in. oz. to 7200 in. lbs. or 600 ft. lbs.

Bulletin SW 15 describing the STURTEVANT "Sensory" (High speed production torque wrenches).



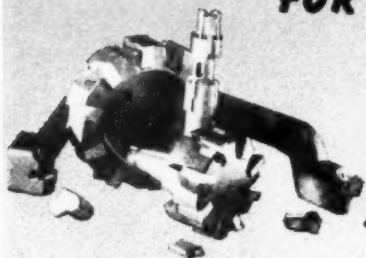
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Important News

FOR PRODUCTION MEN



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Ex-Cell-O Drill Jig Bushings are held to close tolerances . . . they assure longer drill life and more accurate work. Stocks are carried in New York, Los Angeles as well as in Detroit.

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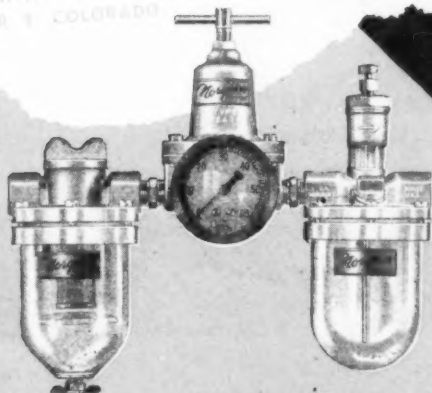
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THE Fulmer Honing Machine produces round, straight, smooth bores to working tolerances as close as $\pm .0001''$.

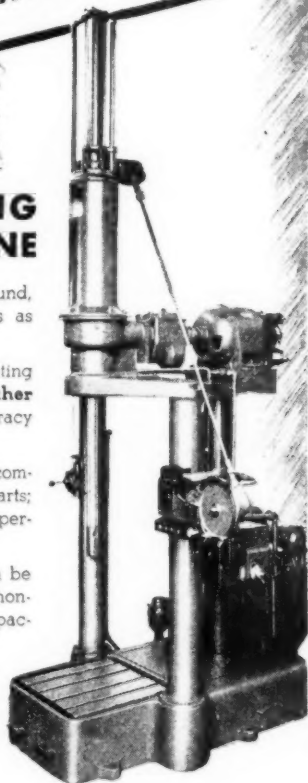
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● What other electric tool would permit you to ream $3/16"$ of metal from a steel plate held in your hand!


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Impact Tool fitted with No. 2 Morse
Taper Socket and $7/16"$ tapered reamer.

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Uses standard attachments

AMAZING! — Even if you stall the spindle completely the motor continues to run—no burned out motors when you use the  Impact Tool.

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AMAZING! — Delivery from stock . . . See your nearest Jobber or Distributor.

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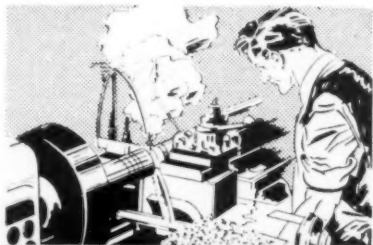
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Heavy wear on tools, machines.**

Add METOL



**No heat--No smoke--increased
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*in the
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*in the
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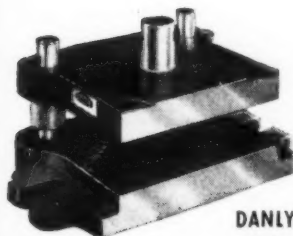
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Excellent for certain precision machining, and for small part assembly and inspection. 22" arm with two permanent flexible joints. Base fits 4" outlet box.

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NEW DESIGN: Walde Truarc rings provide positive seal up to 3000 P.S.I. for plugs without threads. Changeover eliminated two milling, two tapping operations. Result—inexpensive sealing.

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15 Walde Truarc Retaining Rings effect these Savings

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Eliminate 2 milling operations	. \$10
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Cut plug assembly time over 50 %	15
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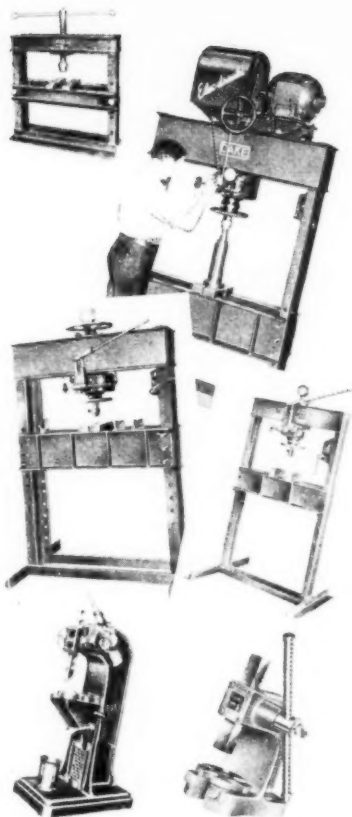
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Title.....

Company.....

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Left to right, top to bottom are shown the 10-ton Utility, 75-ton Elec-draulic, 70 and 25-ton hydraulic, 12-ton combination, and one-ton presses. Other sizes available.

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gears at least
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any shaper you have
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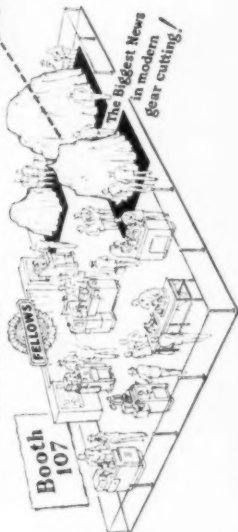
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MACHINE TOOL SHOW

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Booth
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a revolutionary new GEAR SHAPER
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of the name

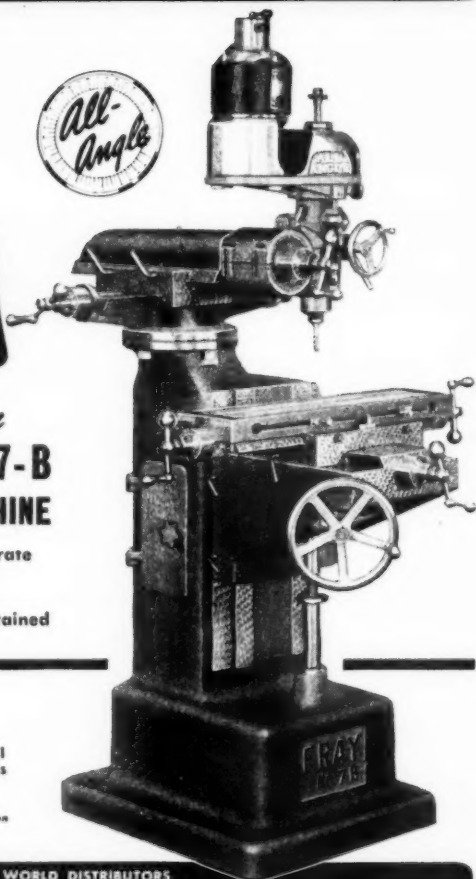
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THE FELLOWS METHOD...MACHINES AND TOOLS FOR
ALL OPERATIONS FROM BLANK TO FINISHED GEAR

YOU DON'T HAVE TO STAND ON YOUR HEAD
... to do a difficult job on a
FRAY Miller!



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- One set up
- All angles quickly obtained



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- Four types
- Adaptable to all Milling Machines

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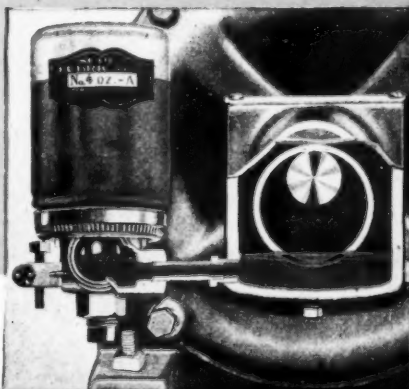
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There is no drippage, no waste, no over flow. Oil is automatically led to the bearings as required.

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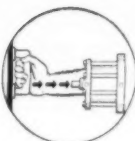
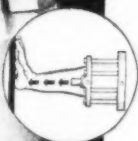
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GRINDING WHEEL DRESSERS

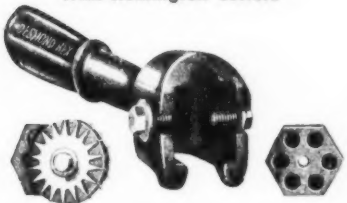
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Designed for use on various sizes of grinding wheels where quick dressing is essential. 5 types of handles and 3 sizes of cutters meet the full range of wheel dressing requirements.

DESMOND HEX DRESSERS With Huntington Cutters

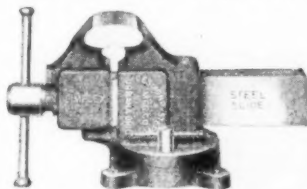


This dresser, with its six-hole bearing blocks contained in its head, is the most durable mechanical dresser made. As one pair of bearing holes becomes worn, the hardened steel bearing blocks are turned to present a new set of bearing surfaces.

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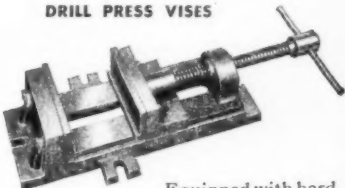
The solid steel slide makes these vises stronger than iron slide vises. The jaw inserts are removable. Two point bearing increases gripping power and the outside screw retainer enables easy lubrication of screw.

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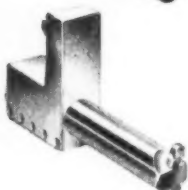
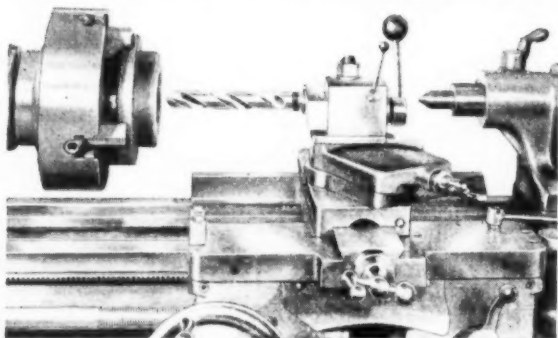
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DRESSERS & CUTTERS

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50 YEAR ADVANCE in LATHE TOOLING!



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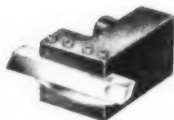
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OR PRODUCTION LINE**

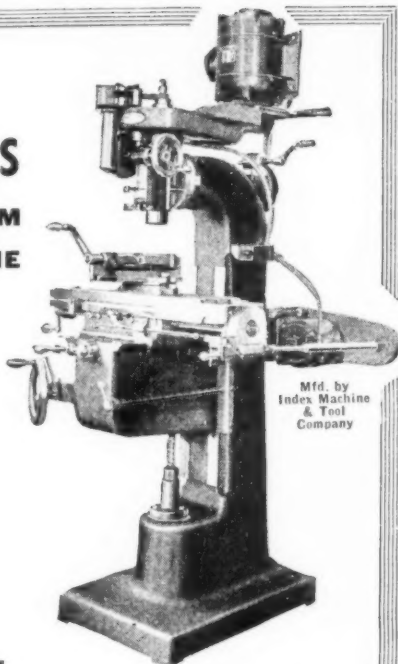
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If you want speed and precision on milling, drilling and boring send for a catalog on Index Mills.

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A quality tool for precision work in the tool room or production line, incorporating such features as ball bearings—hardened and ground worm—quick acting throw-out for free hand turning—single movement table lock that does not cramp table out of alignment—compound trough, 12" size only.



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& Tool
Company

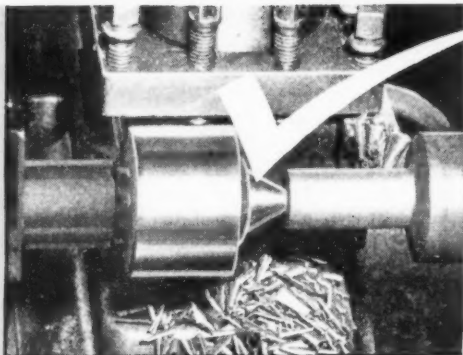
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Index Mills participated in all important war production programs from camera and guns to atomic bombs. Ask any owner how they like their Index Mill.

*Write to Factory Sales and Distributing
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BLANK & BUXTON MACHINERY CO.

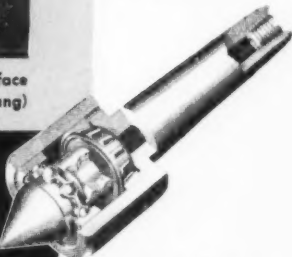
3100 E. MICHIGAN AVE.
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Turning 3" dia. cast iron bar at approximately 225 surface ft. per min. ($\frac{1}{8}$ " wide cut, 300 rpm., .015" feed; 16" overhang)

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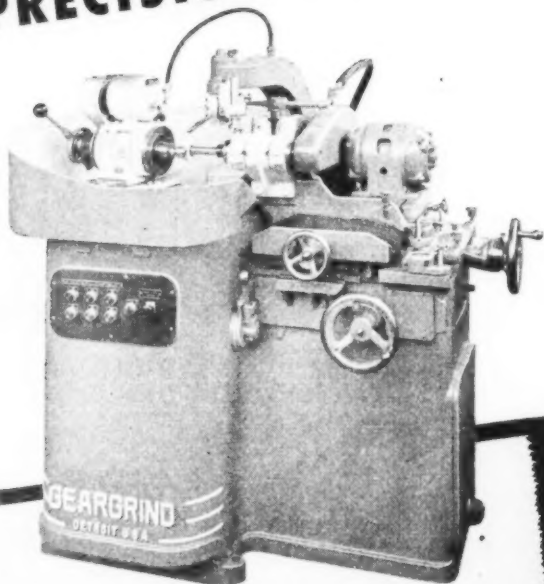
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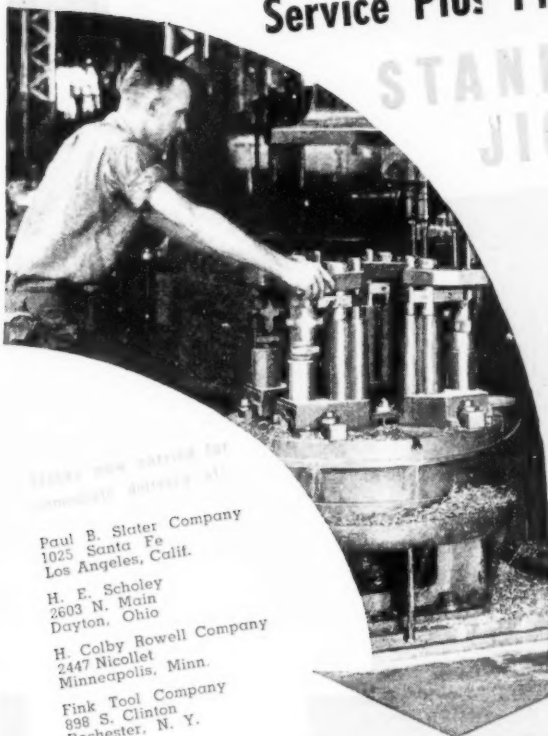
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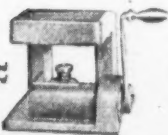
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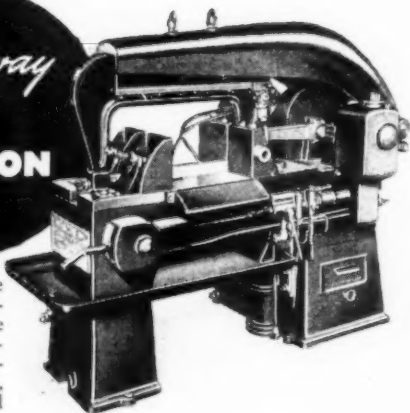
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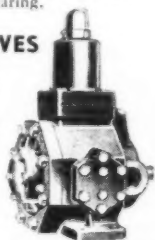
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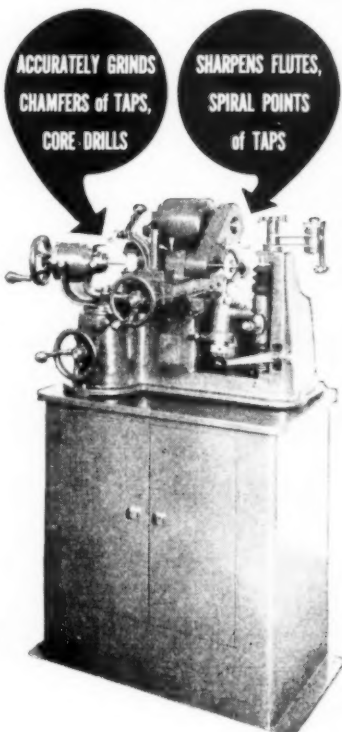
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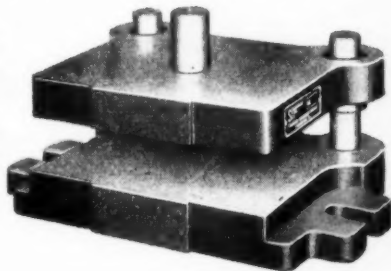
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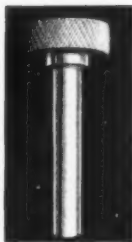
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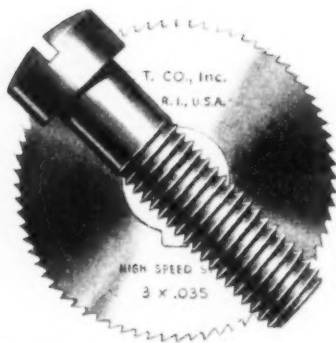


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Complete stocks of these sizes are available.



For detailed information on these and other Circular Saws send for Catalog . NOW!



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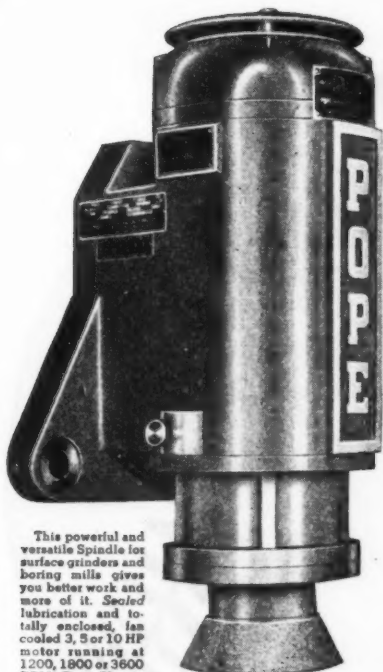
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These Two **POPE** MOTORIZED GRINDER SPINDLES Lead The League

POPE builds hundreds of different sizes and types of Precision Spindles but these two have proved the most popular and most widely used of them all — and we've been designing and building Spindles for 27 years.



This streamlined 6" x 18" Surface Grinder Spindle with motor sealed in and with sealed lubrication delivers full 1 HP at the wheel, runs cool, roughs off surplus metal faster, produces finer finishes. Data Sheet 12 gives you the details.

No. 45

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81



HOW TO SELECT *the Right* UNIVERSAL JOINT

Universal joints perform various functions in a wide variety of applications — from heavy duty power transmission to high or low speed light duty installations. Selection of the *right* joint for the job is important.

Either the Curtis Standard — available in 14 sizes, from $\frac{3}{8}$ " O.D. to 4" O.D., single or double — or the new Curtis Ball-Type in 4 sizes, from $\frac{1}{2}$ " O.D. to $1\frac{1}{4}$ " O.D., will enable you to specify the correct size and strength of joint to secure the most economical and trouble-free installation.

For heavy-duty jobs specify Curtis Standard Joints — made of alloy steel throughout with each part heat treated and ground for maximum strength, long life and accuracy.

For light-duty work specify Curtis Ball-Type Joints — with bronze center ball and steel forks with center pins of heat treated, centerless ground steel.

Select the RIGHT joint. →

Cat. No.	Type	O. D.	Overall Length	Breaking Loads	
				Static Torque in lbs.	Tensile Load Pounds
C-642	Std.	$\frac{1}{2}$ "	2"	340	1000
CS-42	Ball	$\frac{1}{2}$ "	2"	170	720
C-644	Std.	$\frac{3}{4}$ "	2- $\frac{11}{16}$ "	1300	2800
CS-44	Ball	$\frac{3}{4}$ "	2- $\frac{11}{16}$ "	650	2000
C-646	Std.	1"	3- $\frac{3}{8}$ "	2500	5150
CS-46	Ball	1"	3- $\frac{3}{8}$ "	1250	3600
C-648	Std.	1- $\frac{1}{4}$ "	3- $\frac{3}{4}$ "	5000	7200
CS-48	Ball	1- $\frac{1}{4}$ "	3- $\frac{3}{4}$ "	2500	4950

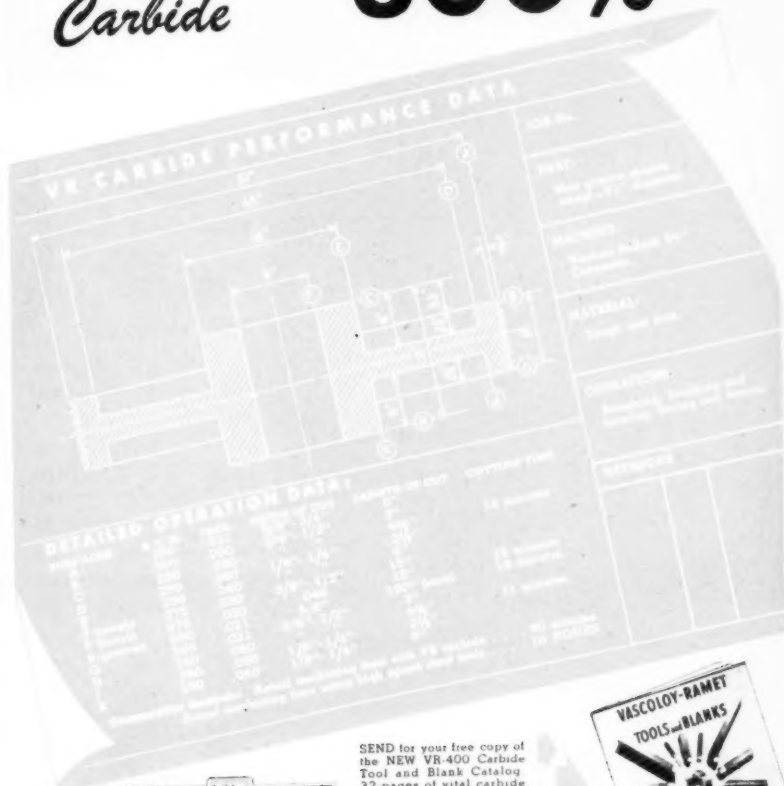
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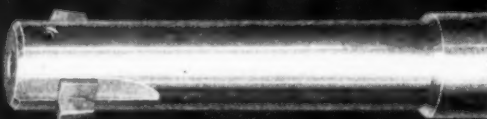
MADISON *BOREAMING

performs miracles with minutes

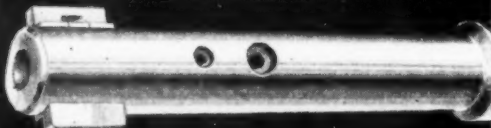
Madison Boreaming drastically cuts time from hole finishing and improves the quality of the holes obtained. It is possible only by teaming together the new Madison Rough Boring Tool and

* Completed Boring Operation

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MADISON ROUGH BORING TOOL in most cases removes as much stock in one pass as an ordinary single point tool removes in three passes . . . and at faster speeds. It delivers holes ideally prepared for a better finishing job by the Madison Finish Boring Tool.



MADISON FINISH BORING TOOL on most jobs delivers holes with finish so fine that it seldom requires any additional finishing operation. Cutter may be floated in the bar. No special tool holders or chucks necessary.



Rough Boring Cutter



Finish Boring Cutter

Design features of the Roughing and Finishing Cutters have been proven for over thirty years. Both cutters have the exclusive one-screw adjustment feature. The cutter blades form their own cutting block. No delicate or loose parts to break or lose, or waste time in adjusting.

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3. The cutter of a Madison Finish Boring Tool may be floated in the bar. No special floating tool holders or chucks necessary.
4. Madison Rough Boring Tool and Madison Finish Boring Tool are interchangeable in the same setup. Permits performance of both operations successively if desired.



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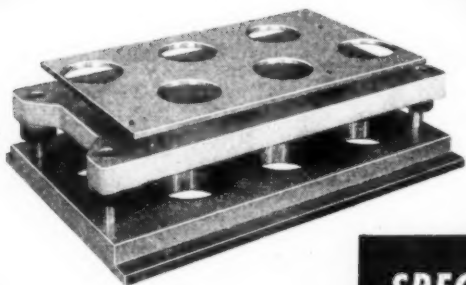
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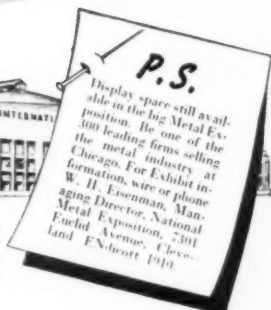
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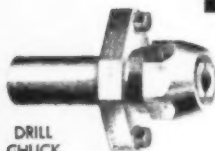
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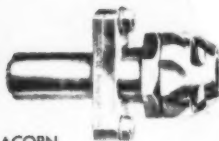
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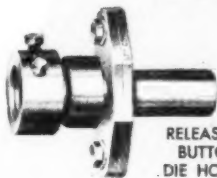
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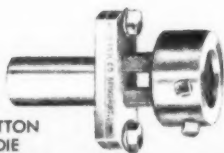
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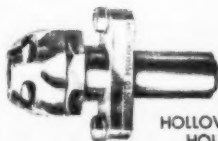
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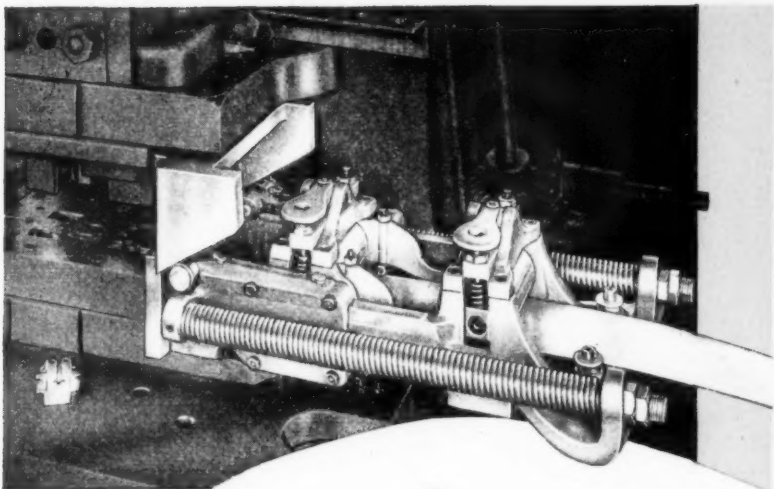
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ECONOMICAL — Set-up time is only a *Fraction* of that required by other type feeds. Buy several Dickerman Feeds for the price of one roll feed.

Feeds brass, steel, copper, aluminum, paper, mica, rubber, fibre, plastic and others. Thousands in use throughout the country.

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H. E. DICKERMAN MFG. CO.
 321-92 ALBANY STREET • SPRINGFIELD, MASS.

POWERED for *Precision* Performance



HAAG MACHINE COMPANY

Hawthorne, New Jersey...manufacturers of fine precision Spinning Lathes, realize the necessity of having dependable, continuously smooth driving power.



Capacities:

Single Phase $\frac{1}{2}$ and $\frac{3}{4}$ hp.
Polyphase $\frac{1}{2}$ to 20 hp.

For this reason, as have many other manufacturers, the Haag Machine Company chose LIMA multi-speed Gearshift Drives. You too can have the advantages of smooth... continuously dependable power by installing LIMA multi-speed Gearshift Drives as an integral part of your product. Submit your drive problems to us. Our Engineers will make a survey of your needs without cost.

Write us today.

THE LIMA ELECTRIC MOTOR CO.

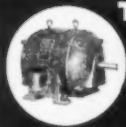
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REPRESENTATION IN MOST PRINCIPAL CITIES

LIMA GEARSHIFT DRIVES

LIMA PEDESTAL GRINDERS - LIMA ELECTRIC MOTORS





**Help yourself to faster,
more economical operation**

MODERN-MAGIC CHUCK AND COLLET EQUIPMENT

Equip your multiple or single spindle machines, used for a sequence of operations, with MODERN-MAGIC Chucks and Collets, and step up your production. Idle time of revolving spindles is reduced to zero . . . tools can readily be changed while the machine is running. Single spindle machines are given practically multiple spindle range by these MODERN tools. They pay for themselves many times over in time saved. Full information upon request. Why not investigate today?

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No. M-1

**PROMPT SHIPMENT...
USUALLY FROM STOCK**

MODERN TOOL WORKS

DIVISION OF
CONSOLIDATED MACHINE TOOL CORPORATION
ROCHESTER 10, NEW YORK

OIL-FILLED BENCH STONES COST NO MORE THAN DRY STONES

but ...



...THEY SHARPEN BETTER!

Oil filling is a built-in extra service feature of Crystolon Bench Stones — at the price of regular dry stones. And this is important, because bench stones are supposed to be used with oil. Oil makes them cut faster and cooler and produces a better cutting edge. Oil also helps them resist glazing or filling.

But oil filling is a messy job at best — and it has to be done right. The oil must penetrate the pores of the entire stone. And, unless the right kind of oil is used, the surface of the stone will gum.

Crystolon Bench Stones are made of genuine Norton silicon carbide abrasive, vitrified bonded and oil-filled at the factory for your convenience and for better sharpening. Ask your Distributor to furnish oil-filled Crystolon® Bench Stones for extra service at no extra cost.

* For oil-filled aluminum oxide bench stones, specify "India."

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**FLEXIBLE SHAFT
GRINDER**

Workmen handle grinding, sanding, wire brushing, polishing and buffing jobs faster, with less fatigue when equipped with this powerful Mall Flexible Shaft Grinder. Its flexible shafting and swiveling motor follow the operator's movements, per-

mitting him to work in any position and at any angle.

A size and model for every shop, plant and job. Available with low caster base, pedestal caster base, or overhead mounting for maximum portability.

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The M-R-C **"SYNTHE-SEAL" BEARING**

**Incorporated in this bearing
are the refinements gained
by over a half century
of experience in the
manufacture of ball bearings**

**A STANDARD-DIMENSION
BALL BEARING WITH A
REMOVABLE SYNTHETIC RUBBER SEAL
IMPERVIOUS TO OILS AND GREASES**

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SEE THIS BEARING AT BOOTH 156

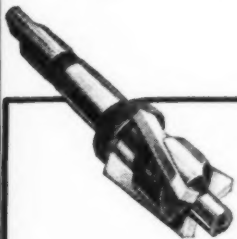
MACHINE TOOL SHOW at the Dodge-Chicago Plant

INCREASE PRODUCTION



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ADJUSTABLE HOLLOW MILLS



Other Genesee tools
that will increase pro-
duction.

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Inserted Blade
FACING AND
COUNTERBORING
TOOLS
•
SPECIAL PRODUCTION
TOOLS

There is a Genesee for every hollow milling job. Available in 16 styles. Standard sizes from 0 to 2", with straight or Morse taper shanks carried in stock . . .

- Each size tool has $\frac{1}{8}$ range.
- Blades quickly ground in a simple fixture.
- All tools manufactured of heat-treated alloy steel.
- Adjusting threads are ground

from the solid and adjusting rings are lapped for extreme accuracy.

- Furnished with high speed steel, cast-alloy, or Tungsten Carbide tipped blades.

Let our Engineering Department solve your Production Tool problems.

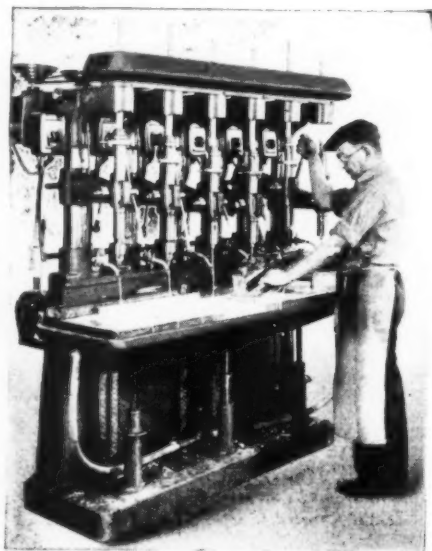


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catalog 45H.

ADJUSTABLE HOLLOW MILLS • FACING AND
COUNTERBORING TOOLS • SPECIAL PRODUCTION TOOLS

Prompt Delivery on these

"Buffalo" No. 16 Drills



These popular $\frac{3}{8}$ " capacity bench and floor drills are available in single and multi-spindle models, for hand or power feed in 8", 12" or 15" overhang.

Built for production service they are rugged from base to spindle-tip. All details on which accuracy depends were designed with extra-service margin, so that long life is assured.

Special equipment, such as coolant system, low speed attachment and tapping attachment, is available.

At the present time, we are able to make prompt delivery on most models in this line. Write for Bulletin 2730-E which gives full details.

*See this Drill at the Machine Tool Show
Chicago, Sept. 17-26th.*

BUFFALO FORGE CO.

161 Mortimer Street

Buffalo 4, New York

Canadian Blower & Forge Co., Ltd., Kitchener, Ontario

Buffalo

FOR ACCURATE LOW-COST PRODUCTION DRILLS

Rousselle

NO. 3 OBI 25 TON PUNCH PRESS
HAVE THE SPECIAL

Hardened and Ground Ways

Ways are made of hardened and ground steel assuring accuracy and long life to the slide. Dies will stand up longer under continuous operation.

Heavy Reinforced Frame

Advanced design, massive construction, of high-tensile semi-steel casting, heavily ribbed, to resist distortion.

Roller Bearing Flywheel

Solid web flywheel is mounted on two sets of roller bearings.

Removable Bearing Blocks

The complete crankshaft assembly and bearing blocks can easily be removed or replaced without any fitting or adjustment. Maintenance is quick and simple.

Round Pin Clutch

Clutch is of simple and sturdy design, using a round clutch pin made of chrome nickel alloy steel, hardened and ground engaging in three drive pins. Positive one revolution device which can be quickly changed for repeat operation.

Front Operated Inclining

One man can easily and safely incline Press to 30 degrees with ball bearing inclining device at the front of machine.

Ground and Polished Crankshaft

Crankshaft is made of high carbon steel, ground and polished with ample bearing surface, with removable and renewable main bearings.

Large Die Space

Distance from slide to bolster stroke down, adjustment up is 9" center of slide to frame 7" opening through back 9 1/4".

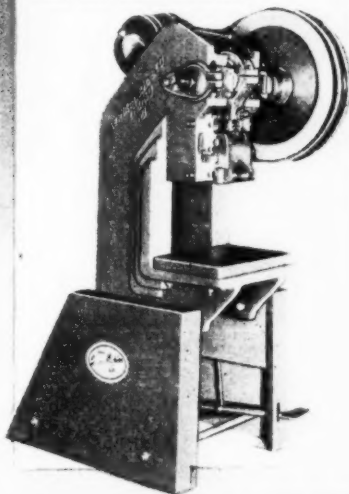
See Our Exhibit, Booth 11 at
THE PRODUCTION AND MACHINE
TOOL SHOW

Held at the
INTERNATIONAL AMPHITHEATRE
Chicago, Illinois
Sept. 17 to 26 inclusive

PRECISION MADE FOR LONG SERVICE

Rousselle Punch Presses are used extensively in many branches of industry throughout the world. They are an answer to the urgent need of a low cost, precision built and dependable press. It is designed to meet today's demand for high production, low maintenance and continued operation. Engineering skill, heavy construction assures meeting the severity of service to which they are subjected, thus insuring high production at low cost. Years of experience in design and testing goes in the manufacturing of Rousselle Punch Presses.

These Presses are used for blanking, embossing, piercing, forming, drawing and for many other special operations.



OTHER PRESSES: 5-10 TON OBI BENCH MODELS, 5-10-15 FLOOR MODELS
15-25 TON WITH ADJUSTABLE BED . . . SEE YOUR DEALER OR WRITE



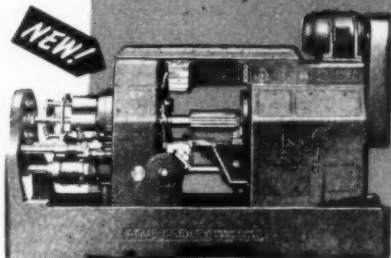
SERVICE MACHINE COMPANY

7633 S. ASHLAND AVE., CHICAGO 20, ILLINOIS

See these *NEW* National Acme

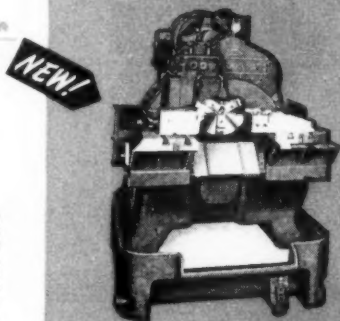
FOR LOWER COSTS ON AUTOMATIC BAR WORK

The new 14" Model RB Acme-Gridley Six-Spindle Bar Machine offers three basic time and money-saving advantages: It's heavier, more powerful, for today's increased speeds and feeds. It's more versatile—will handle more operations (including many second operations)—at a lower machine investment, with less handling, lower machining costs. And it's easier to operate—to give maximum man-hour output, compensating for increases in other costs.



FOR INCREASED PRODUCTION ON CHUCKING OPERATIONS

The new Acme-Gridley 12" Chuck-Matic is an air-operated, single-spindle, automatic chucking machine, especially suited for heavy-duty, high production on castings, forgings and tubing parts. It's built rugged—and powerful—to operate at speeds and feeds as fast as carbide-tipped tools can take it. It's simple, compact, easy to operate—one man can run as many as four machines.



NATIONAL ACME AT THE MACHINE TOOL SHOW
ALSO WILL DEMONSTRATE 4, 6, AND 8 SPINDLE BAR AND
CHUCKING AUTOMATICS AND OTHER STANDARD PRODUCTS

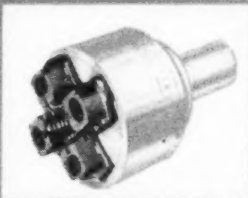
Production Profit-Builders at the Show



NEW!

FOR HIGH-SPEED PRECISION THREAD AND FORM ROLLING

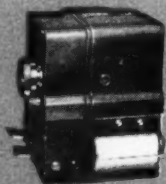
The new Nameo Roll-Matic is a triple-roll hydraulic thread and form rolling machine, built to cut your costs on all standard pitch threads in sizes from $\frac{3}{8}$ " to $1\frac{1}{2}$ ". Operation is simple, dependable—and versatile. The three rolls, backed up by powerful, straight-line ramming, give positive, equal pressure—resulting in smooth threads, close fit (class 1 fits are easily attainable) and no distortion, even on hollow work.



NEW!

FOR MORE ECONOMICAL THREAD-CUTTING PRODUCTION

The new adjustable-blade chasers bring even greater versatility to standard Nameo self-opening Vers-O-Tool die heads. These new chasers are especially suited for shorter runs, where they minimize tool investment. Adjustable chasers cover the range of the six standard Vers-O-Tool heads for capacities from $\frac{1}{8}$ " to $1\frac{1}{8}$ ", and are interchangeable with circular chasers, size for size. Positive adjustment for bringing the cutting edge up to proper position after each regrind and more grinds per chaser—are outstanding advantages.



NEW!

10% MORE PRODUCTION ON ANY MACHINE

The Chronolog is National Acme's automatic, electric means of providing accurate, indisputable information on machine performance. Approved by management and labor alike, it gives a complete production record, telling why, when and for how long any operation was down during the shift. Without exception, users report a minimum of 10% increase in production after installing the Chronolog.

The NATIONAL ACME CO.

170 EAST 131st STREET • CLEVELAND 8, OHIO

Meet us at
BOOTH 628
MACHINE TOOL SHOW
CHICAGO—SEPT. 17-26



*Just take hold
of this new
**FLEX
HANDLE!***

You'll sense instantly—a sure “feel” of lightweight power and bulk free balance the moment you pick up this new FLEX HANDLE! It's just one of the many redesigned members of this famous Line that has consistently brought you Mechanics Hand Tools that Make Money.

Note the remarkably slim, new OVAL design... it's streamlined, yet strength has actually been increased... clumsy bulk of the old round shape has been scientifically eliminated and steel added in the direction of strain. The new oval grip, too, is beautifully designed to fit the hand more securely.

Stronger, slimmer—amazingly effective in the tough spots—that's the story on the famous New Britain Line today!



Excess material, top and bottom, in old round shapes did little or no work. Removing this surplus greatly reduces useless bulk. Slight reinforcement added to each side in new Oval design—in direction of push and pull—develops amazing new strength.

There's knuckle and job insurance in these really modern Tools of Greater Strength—Better Fit... ask your Mill Supply Jobber to show you the Line. The New Britain Machine Co., New Britain, Conn.

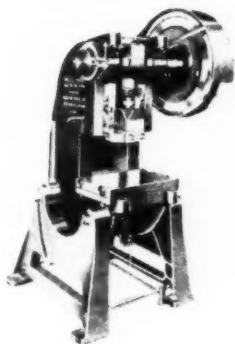
*The complete
New Britain
Line for
Automotive
Aircraft, Gen-
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Production
Needs is
sold by lead-
ing Jobbers.*

New Britain

GREATER STRENGTH • BETTER FIT HAND TOOLS



PRESS-RITE PRESSES

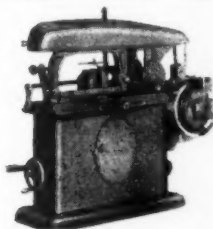


New and improved Press-Rite Presses, Shape-Rite Shapers, and Keller Power Hack Saws are now ready to meet the exacting demands of present day "stepped up" production. All of these products have been tested and approved after many years of service in large and small manufacturing plants, tool and die shops, small instrument manufacturers, etc. Press-Rite Presses are built in several sizes from 5 to 30 ton capacity. Keller Power Hack Saws are built in several sizes from small bench model to No. 3 Hy-Duty. The Shape-Rite Shaper is built in one special Hy-Duty Model with 8 inch stroke.

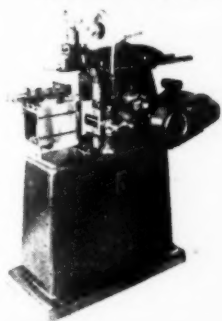
We solicit your inquiries and will forward complete information upon request.

Write to Dept. B-3.

We Present NEW and Improved Models KELLER POWER HACK SAWS

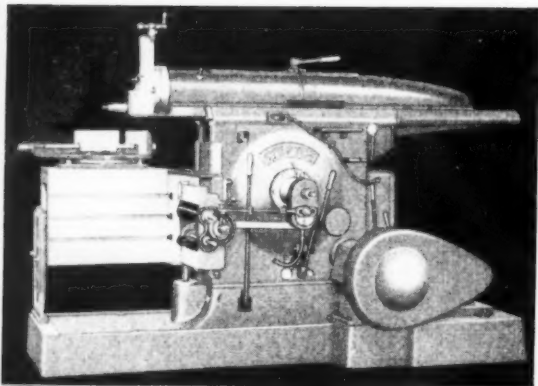


SHAPE-RITE SHAPERS



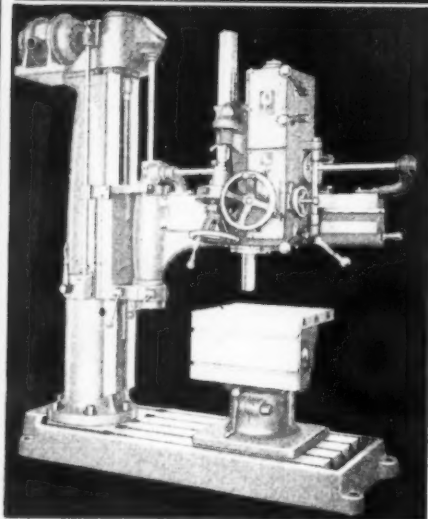
Sales Service Machine Tool Co.
2363 UNIVERSITY AVE. ST. PAUL 4, MINNESOTA

CONSIDER—



STEPTOE SHAPERS

—Vee type ram—
Centralized control.
Seven heavy duty
sizes, fully equipped
with Timken bear-
ings—Four or eight
speeds—Twin Disc
Clutch—America's
oldest and best
shaper—Write for
catalog B4620.



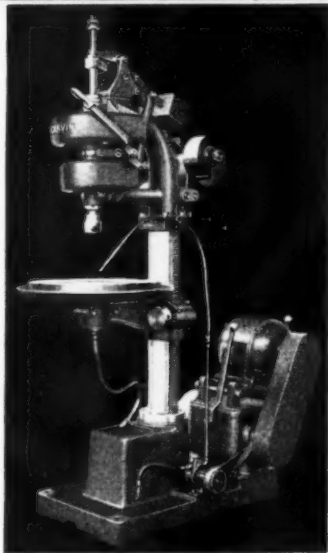
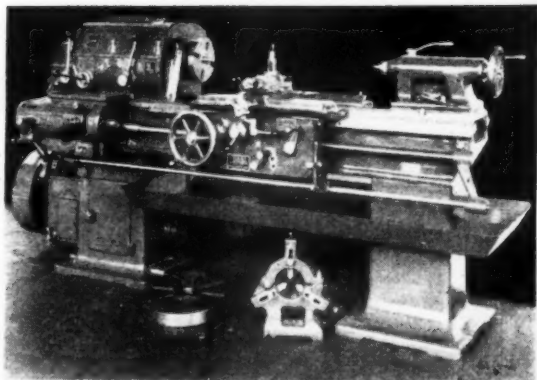
WESTERN HIGH SPEED
RADIAL DRILLS—for econom-
ical high production—Low-
Hung spindle drive—12
speeds in head, 40-2000 R.P.M.
—made in six sizes—Ball
bearing throughout—Write
for catalog B4431.

THE BIG

WESTERN LINE

CHARD LATHES —
Timken bearing equipped — Multi speed or cone head. Incorporate latest developments in design and accuracy. Built in five sizes:—16"-18"-20"-24" & 28" swing. Write for catalog B4240.

GARVIN AUTOMATIC TAPPERS —
"Operator's responsibility ends at the starting lever"—Full range of sizes and multiple heads, 3/16" to 3" diam. taps — Timken bearing equipped — Adjustable torque — Precision depth and reverse control — Less tap breakage — Production estimates on request. Write for catalog B4612.





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ON EARTH**

Again—in the center of Progress—AVEY presents to you the latest, finest, highest quality line of Sensitive Drilling Equipment you've ever seen.



KNOCK OUT MORE PRODUCTION WITH "KNOCK-OUT" TOOLS!

KNOCK-OUT



1. *Knock-Out* REAMER DRIVES

Ream, hone, burnish, lap, etc. Has two-jaw universal chuck (1-5/8") K-O Keyless Drill Chuck (3/4"). Two models—40-1 and 20-1 gear ratio; speeds 20-120 R. P. M. Speed reducer unit may be purchased separately.

2. *Knock-Out* KEYLESS DRILL CHUCKS

No more drills ruined by slipping! This fast-positive-self-energizing chuck tightens in proportion to work load. Releases with finger-tip pressure. Ideal for production or tool room. Five sizes, 0 to 7/8" capacity.

3. *Knock-Out* WHEEL DRESSERS

Scrubbing action of this abrasive wheel dresser does better job with minimum material removed. Ruggedly built with hardened hub and adjustable centers—wheels simple and inexpensive to replace. Four sizes.

4. *Knock-Out* EXPANDING MANDRELS

One-piece expanding sleeve holds firmly, accurately, on milling, turning, grinding operations. Quicker, easier to use; five mandrels cover 3/8" to 2-1/2". Other sizes up to 5 1/2".

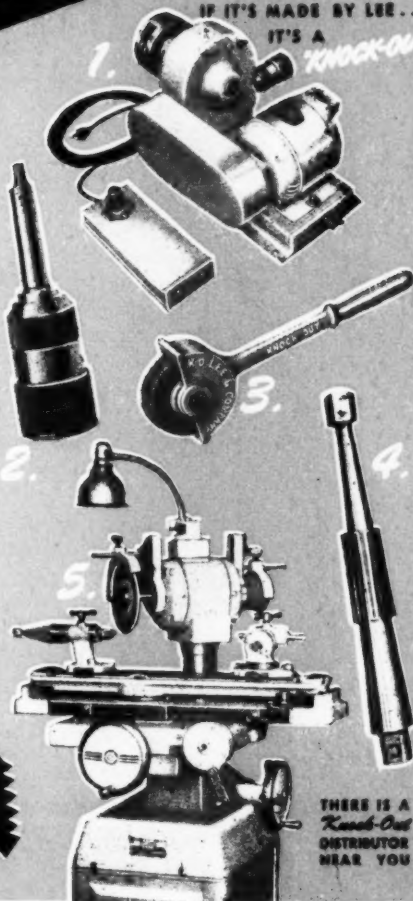
5. *Knock-Out* UNIVERSAL TOOL GRINDER

Universal grinders, carbide grinders, and chip-breaker grinders. Models and sizes to fit every shop, large and small. Simple to operate, accurate, ruggedly built for long service.

See Your Nearest Mill Dealer
or Write to

K.O. LEE CO.
ABERDEEN, SOUTH DAKOTA

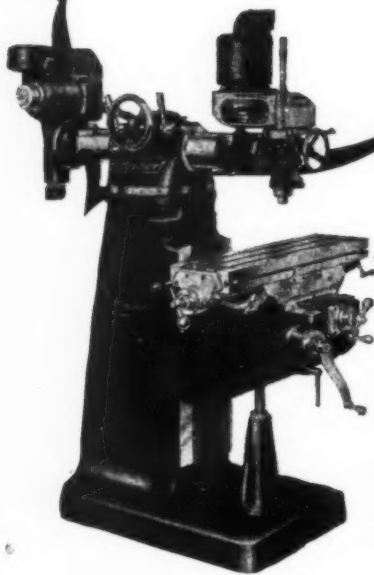
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IT'S A "KNOCK-OUT"



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Knock-Out
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THE PRACTICAL SOLUTION...

TO YOUR
MILLING
PROBLEMS



The Bridgeport Milling Machine

The Bridgeport Turret Milling Machine with High Speed Attachment handles milling, drilling and boring at all angles, with maximum ease and convenience. It is accurate and speedy, sturdy and powerful—a precision machine for production demands.

Shaping operations can be performed at all angles, making this attachment fast and practical on die and mold work of all kinds, as well as for intricate slotting on production jobs.

Features include: 15" diameter turret with 5" overarm, rugged construction, table, knee and saddle in convenient front-of-machine position, anti-friction bearings throughout, keyed overarm with worm wheel control for angular settings, large diameter graduated dials.

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BRIDGEPORT, CONN.

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HEAVY-DUTY DRILLS

This U-44 THOR HEAVY DUTY $\frac{1}{2}$ " DRILL is unequalled in compact power, light weight convenience and high efficiency for continuous service on hard production and maintenance. There's a full range of sizes—a tool

for every need. For full information ask your nearby Thor Distributor or write for catalog.

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ANNOUNCING THE NEW *Atlas* "QUICK- CHANGE" 10" LATHE



PROVIDES INSTANT SELECTION OF 54 THREADS OR FEEDS

(QUICK-CHANGE UNIT ADAPTABLE
TO ANY ATLAS 10" LATHE)

QUICK AS A FLASH, you can change threads or feeds on the new Atlas Quick-Change 10" lathe . . . 45 by simply shifting two levers on the gear box . . . 9 more by merely changing a sliding gear's position! It gives you all design and construction "extras" that have long made Atlas the leader in lathe values — plus new speed, accuracy, and efficiency in every turning operation requiring power feed.

It's easy to save set-up and operating time with Quick-Change: lever and gear positions are clearly indicated on front of gear box; gears are readily reversed or disengaged from lead screw by a convenient tumbler-gear lever. The Quick-Change does not limit the odd thread and feed capacity of the Atlas lathe. Hundreds of additional feeds and speeds . . . for metric threading, special tooling, coil and wire winding, etc. . . are made by varying the gear train with standard Atlas change gears. An easy-to-understand "Hand Book" is furnished, showing the many setups possible on this new lathe — or on any standard Atlas 10" lathe with the Quick-Change unit added.

Other features of Atlas 10" lathes include: Timken tapered roller bearings; precision ground bed; back gears; complete V-belt drive; 16 spindle speeds; reversible automatic power cross and longitudinal feeds.

Send for new Atlas Quick-Change bulletin. Gives complete specifications and operating details on this time and money saving innovation. Your Atlas distributor can explain how the Quick-Change unit can be installed in an hour's time on your present Atlas 10" lathes.

ATLAS PRESS COMPANY
950 N. PITCHER ST. KALAMAZOO 13D, MICH.

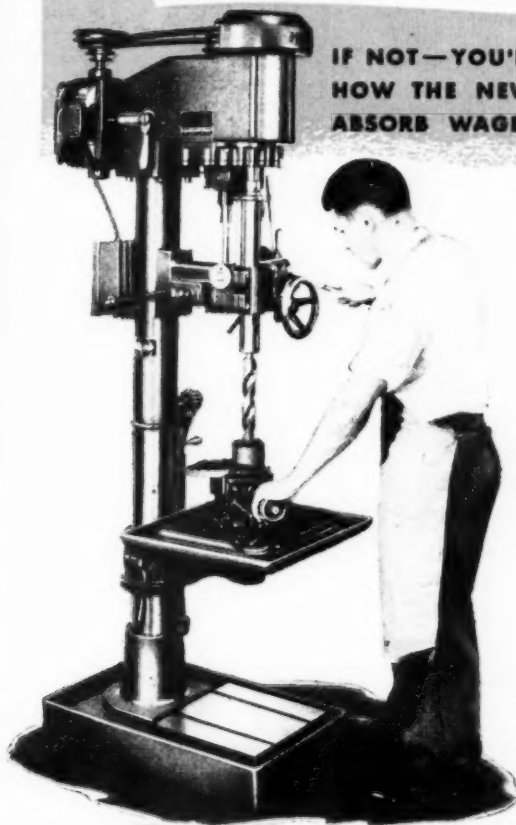


Model QC-45 illustrated.
Between centers 27 1/2 in.
Also QC-55 — 30" between
centers 35 1/2 in.
Price on request to U.S. distributor

HAVE YOU LOST THE ART OF...

Time and Motion study

IF NOT—YOU'LL SOON DISCOVER
HOW THE NEW C-20 SIBLEY CAN
ABSORB WAGE INCREASES



You say—Only by more output can costs be cut!

All right—compare T. & M. studies on your present equipment with this 20" Sibley drilling and tapping machine. The difference will surprise you!

You have easy access to controls—turn a knob to select the proper geared power feed. A lever allows convenient shifting of V-belt. This Sibley is a precision tool for sensitive drilling at high speeds, but has ample power to drill $1\frac{1}{2}$ " in mild steel. 8 speeds range from 65 to 1360 RPM, driven by a 2 H.P. motor.

SEND FOR CATALOG NO. 75
Get complete details to compare with your present equipment.

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Dodge-Chicago Plant
SEPT. 17-26

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Automatic (including
Screw Threading and
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Wire Feed

NEW DEVELOPMENTS for increased efficiency in manufacturing and toolroom operations will be shown *for the first time* at Booth 505. Come, see new ideas for improving productivity per man and machine. Get "first-hand" answers to your questions. Other well-known, time-tested Brown & Sharpe Machines, Attachments and Small Tools will be displayed also . . . a good opportunity to examine and compare all their features. You are cordially invited. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

SHARPE



Bristol's TWIN-HEAD BORER



**DESIGNED FOR
HIGH SPEED
MULTIPLE-BORING
PRODUCTION**

This flexible, two-motor boring machine is adaptable for heavy duty roughing as well as light finishing cuts. It's universal system of standard and special heads speeds up production.

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COMPANY**

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BRISTOL, PA.

Take the packaging
LUMPS
out of your production
gravy!



with Seal-Peel, the Modern Packaging Material

Production is no cinch—any way you look at it. But there's nothing like unnecessary expenses to put unsavory costly lumps in your "production gravy", and raise havoc with your budget.

Seal-Peel removes those "lumps"—reduces packaging time and cost as much as 90%. Seal-Peel is a tough, stable plastic packaging material that is applied by dipping.

DIPPED—your product is ready for shipment. No excelsior, dunnage or other costly space consuming inner packaging required. **DIPPED**—your product is protected against rust, corrosion, condensation, chipping or scratching, moisture penetration, rough handling and tampering. Easily removed when desired—it peels like a tangerine.

Call on the Seal-Peel Process Laboratories today. Let them demonstrate a packaging method without lumps. They'll make money for you.

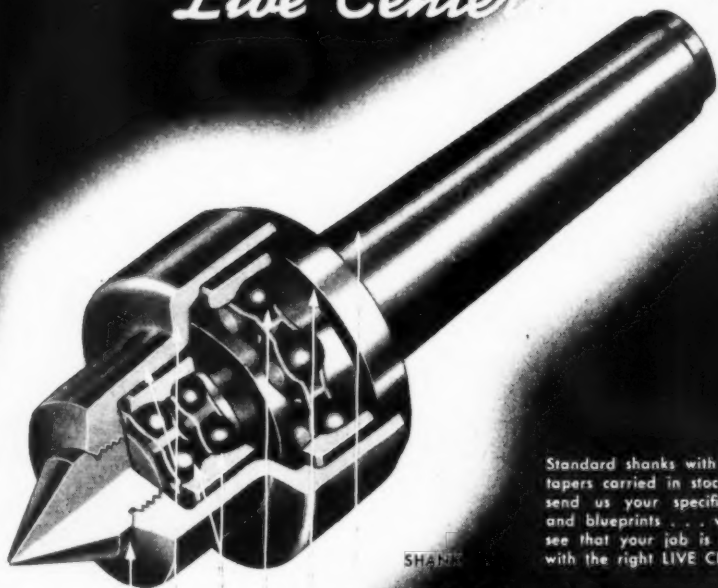


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Standard shanks with Morse tapers carried in stock . . . send us your specifications and blueprints . . . we will see that your job is set up with the right LIVE CENTER.

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GREASE SEAL

LARGE THRUST BEARING

LARGE RADIAL BEARING

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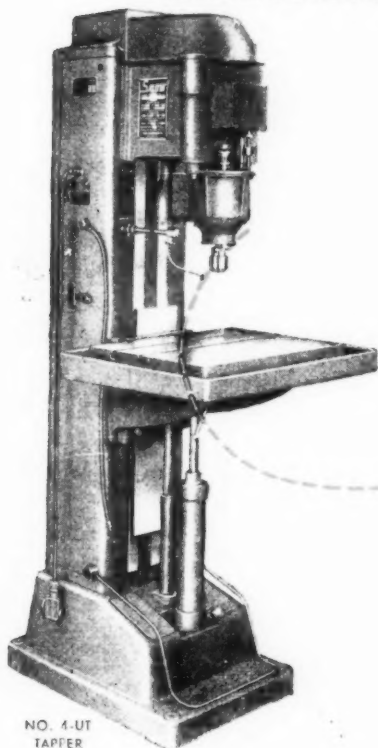
GROUND TRUE with BEARINGS—
REPLACEABLE ALLOY STEEL POINT

STURDIMATIC TOOL COMPANY

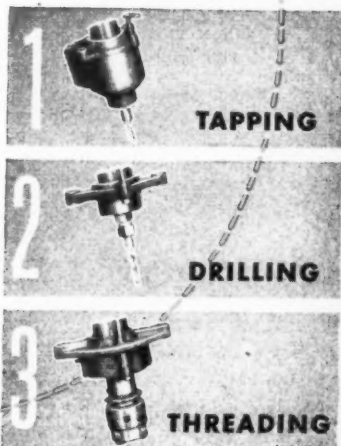
5224 THIRD AVE. • DETROIT, 2 MICH.

AIR OPERATED • ELECTRICALLY CONTROLLED

FUNCTIONS *Three* WAYS



NO. 4-UT
TAPPER



the *basic* **SNOW AIR TOOL**

Time-tested, quality-proven, thousands have been put into use in the past sixteen years. The Snow Air Tool — fundamental tool around which are built—the Snow Tapping Machine, the Snow Drilling Machine, the Snow Threading Machine.

Air operated—electrically controlled, it includes the latest in design. Quick-acting automatic holding fixtures are made fully automatic, semi-automatic or manually operated—all by the turn of a switch.



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There is no surer way of selecting the correct hardness for your segmental wheels than through BAY STATE Fractional Grades. This important manufacturing refinement enables you to choose the exact degree of hardness desired by splitting every normal grade into three degrees of hardness, where a whole grade change would be too great.

Whether it's straight, cup, cylinder, or segmental wheels that BAY STATE supplies for surfacing equipment, maximum grinding efficiency is assured. Write us for specific recommendations.

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Top Performance Consistently Duplicated

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A Few Facts You Should Know

About "Acorn" Dies

SIMPLE CONSTRUCTION • EASY TO OPERATE • FACTORY TESTED

To understand the operation of the "Acorn" Die, one should see it in relation to the "Acorn" Die Holder as pictured at the right in sectional view. The feature which makes the "Acorn" Die so convenient and accurate is the manner in which the four prongs or threaded lands are compressed when the holder cap is screwed down onto the holder. As all bearing surfaces on the holder and die are ground to insure correct alignment and accuracy, even pressure is brought to bear on each of the prongs simultaneously so that they all adjust equally and concentrically. This is done quickly and automatically by tightening the cap and turning up the lock nut. No other adjustments are necessary.

A positive adjustment to size can be obtained by using the threaded plug which comes with every "Acorn" Die. This plug has actually been threaded by the die in which it is shipped and has been carefully checked for accuracy. Thus, if it is used as a setting plug, accuracy of the set up will be assured. For close to shoulder work, quick change over of jobs, accurate threads, specify "Acorn" Dies to your local Greenfield Distributor.

HOLDERS ADAPT "Acorn" Dies FOR ANY MACHINE



REGULAR

Regular "Acorn" Die Holder with longitudinal float which allows the die to follow its own lead independent of any lag in the machine. This holder may be used on practically all automatic screw machines and any other machines which provide for automatically reversing the die or rod at the instant when the desired length of thread has been cut.



RELEASING

Releasing "Acorn" Die Holder, while suitable for all machines, is especially recommended for hand operated machines. The improved clutch mechanism allows the holder to be released without shock.

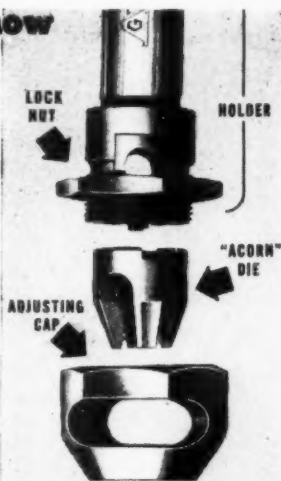


ADAPTER

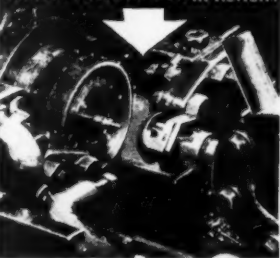
The "Acorn" Die Adapter permits the use of "Acorn" Dies with existing round die holders. It consists of three parts, a Cap to hold and adjust the die, a Lock-Nut to secure the adjustment and a Body. The shank fits round or spring die holders of corresponding size.



ASK YOUR "GREENFIELD" DISTRIBUTOR FOR 12 PAGE "ACORN" DIE BOOKLET!



REGULAR HOLDER and DIE IN ACTION!



GREENFIELD

AND DIE CORPORATION • Greenfield • Massachusetts
and its New Haven Division The GEOMETRIC TOOL COMPANY

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CUTTING TOOLS

ROLLER TURNER,
TURNING, BORING,
FACING TOOLS
MILLING CUTTERS
FORM TOOLS
CENTERS
MASONRY DRILLS



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SPOT FACERS
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SHELL END MILLS



★ The name STAPLES has for many years been symbolic of *undeviating high quality* in the manufacture of Carboloy Cemented Carbide circular cutting tools. Now, to meet the increased demand for Staples quality, our facilities have been expanded to include Carboloy Cemented Carbide turning, boring, facing, roller turner tools—milling cutters—form tools—centers—masonry drills.

This new, complete line of *standard* Staples Tools is now available for immediate delivery. For all *special* tools, submit your requirements to Staples Design and Engineering Service. Write today for new catalog and complete information.

THE STAPLES TOOL COMPANY
CINCINNATI 29, OHIO



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complete
Staples Tool
catalog

Staples CARBOLOY CEMENTED CARBIDE TOOLS

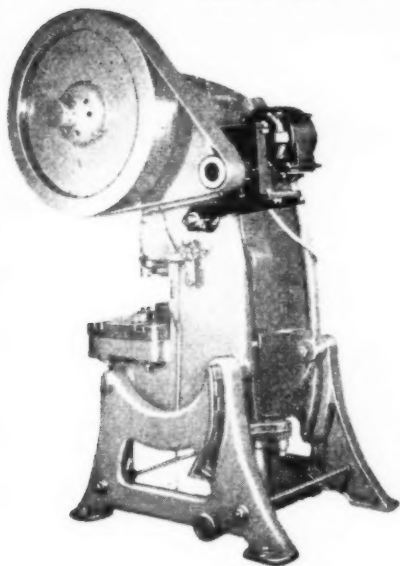
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COSTS
DOWN**

with CULLMAN

**PUNCH
PRESS**

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Individual Cullman Drives assure top production flexibility and greater capacity. Other profitable advantages include more efficient floor layouts, better lighting and other conveniences.

Cullman Punch Press Drives are economical—built for heavy-duty and long life. They pay for themselves with actual time savings and extra capacity. Cullman units are made for motors from 1 4 to 15 h. p.

Get the facts NOW! Write today for full information on Cullman Punch Press Drives.

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Walker-Turner light

KNOW-HOW

Engineering skills developed through association with industries' problems give Walker-Turner unparalleled know-how—unquestioned leadership—in the manufacture of light-weight, low-horsepower Machine Tools . . . machines that are low in cost, and are solving production-cost problems in thousands of industrial plants.

Walker-Turner Machine Tools insure flexibility of operation: Plants using Walker-Turner Machine Tools are prepared for quick production set-up changes at minimum cost. And in the shop where space is a premium, these machines can be added without disrupting shop layouts.

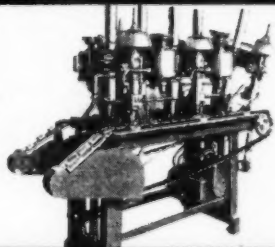
Walker-Turner Machine Tools Replace Costly Machines: Walker-Turner Machine Tools are performing many operations formerly done on costlier and heavier machines and performing these operations more efficiently at greater production rates and less cost. In replacing heavier and more expensive machines, users have answered the oft-quoted question, "Why use a 10 ton truck to do the work of a 1 ton truck?"

Walker-Turner Machine Tools are low in cost: Because of their wide range of speeds for a wide range of materials . . . because of the versatile work performed, Walker-Turner Machine Tools are profitable investments. They're light but sturdy in construction, built to last a long time. Walker-Turner Machine Tools pay for themselves in a few weeks of operation.



GROOVING OPERATIONS 4 TIMES FASTER

S. K. Wellman Company, Cleveland, O. Built own special set-up to take standard Walker-Turner Radial Cut Off Machine and performed grooving operations on airplane parts four times faster.



TAPPING PRODUCTION INCREASED 400%

Pond Engineering Co., Springfield, Mass. Designed this conveyor set-up using five standard Walker-Turner 15" Drill Heads to handle two pieces at once, and increased production 400% over conventional methods.

TWENTY-FIFTH YEAR

1922

1947

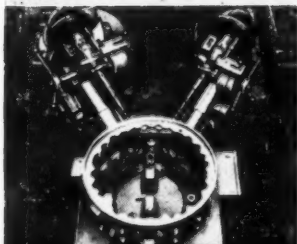


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MACHINE TOOLS

machine tools

SHOW-HOW



JIG-DRILL SET-UP SAVES 30% PRODUCTION TIME

Wright Aeronautical Corp., Woodbridge, N. J. Special jigs built by Wright incorporate Walker-Turner 20" Drill Press Heads, eliminate costly make-ready and cut production time 30% on engine housing sections.



SCREW MACHINE PARTS PRODUCTION UP 30%

Charles Masti Screw Machine Products, Newark, N. J. Built special turning fixtures to be used in combination with 58 15" Walker-Turner Drill Presses, and thereby increased screw machine parts production 30% with unskilled operators.

In these actual shop applications Walker-Turner Machine Tools are used singly or in batteries with jigs, fixtures and attachments to perform specific jobs. Under continuous operation, they provide uninterrupted performance with trouble-free maintenance, smooth operation, and high rates of production at low cost.

Send for Walker-Turner's new illustrated booklet "Case Studies". It contains current case histories showing how these and other plants are using Walker-Turner Machine Tools with user-designed jigs, fixtures and special set-ups for increased production. See how a small investment can bring operating flexibility, increased productivity and low maintenance costs.



Radial Drill, R01753. Price: Less base and motor, \$425.00.



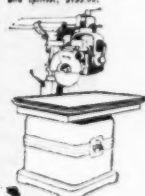
34" Metal Cutting Band Saw, M04793. Price: Less base and motor, \$162.00.



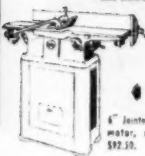
18" Tilting Arbor Saw, T01800. Price: Less motor, switch, extension table, guard and splitter, \$135.00.



20" Power Feed Drill Press, Floor Model, D11001. Price: Less motor, \$320.00.



Radial Cut Off Machine, M04120. Price: With 3 h.p. ground motor, 100 abrasive wheel, base and magnetic overload release, \$453.20.



6" Jointer, F010. Price: Less motor, switch and base, \$92.50.



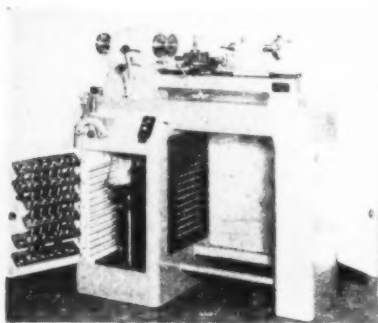
15" Drill Press-Bench Model, D0150. Price: Less motor and belt guard, \$66.50.

COMPLETE CATALOG OF WALKER-TURNER MACHINE TOOLS SENT ON REQUEST

DRILL PRESSES—HAND AND POWER FEED • RADIAL DRILLS • RADIAL SAWS
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES
RADIAL CUT OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

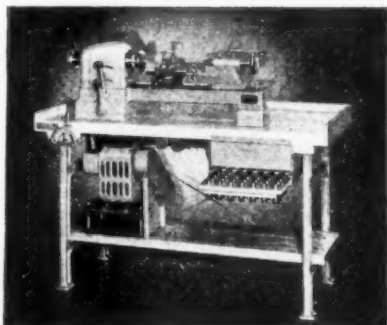
**ON SMALL DIAMETER
PRECISION WORK . . .**

Assure Ultra



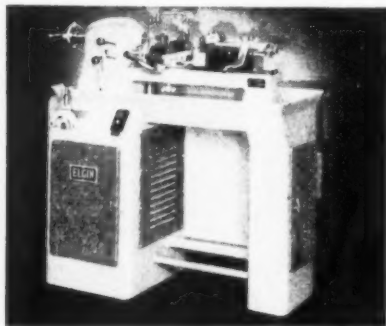
Elgin Knee Hole Type Bench Lathe

Has Variable Speed Drive with range from 120 to 3800 RPM. 9" swing, 17" between centers, 1" collet. Generous leg room for operator. Door of motor cabinet fitted with collet rack. Three roomy storage shelves.



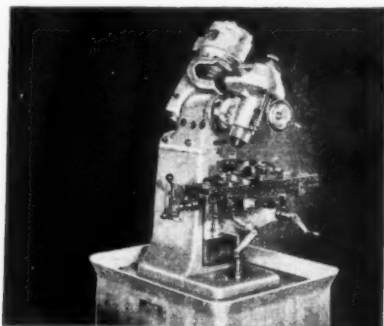
Elgin Bench Lathe

Laminated hard maple top, enclosed motor, safety guard for belt, handy collet drawer. Variable Speed Drive for any spindle speed from 120 to 3800 RPM. 9" swing, 17" between centers, 1" collet.



Elgin Knee Hole Type Hand Screw Machine

Variable Speed range, 120 to 3800 RPM, 9" swing, 1" collet capacity. Collet rack inside of motor compartment door. Independent coolant system (5 gal.) mounted in rear, outside—cleaner, more accessible.



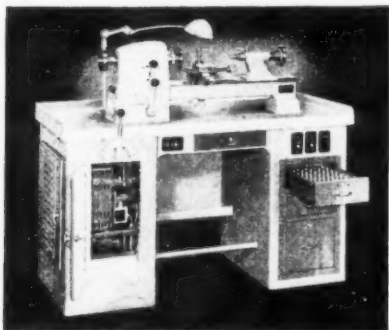
Elgin Vertical Bench Milling Machine

Preloaded ball bearing spindle, 9/16" collet capacity. Five speeds ranging from 400 to 4000 RPM. Vertical travel of spindle, 1 1/4". Table 4 1/8" x 18". 90° swivel each side of center line.

★ ELGIN TOOL WORKS

Efficiency WITH

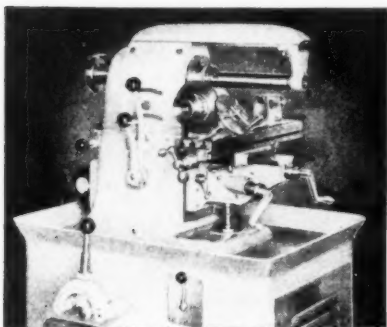
ELGIN BENCH TOOLS



Elgin Desk Type Bench Lathe

Variable Speed Drive, 40 to 4000 RPM. Low speed rate for grinding operations. Free turning spindle for truing-up and setting work by hand. Ample drawer space, 9" swing, 17" between centers, 1" collet.

The entire line of ELGIN High Speed Precision Bench Tools is designed to pay you dividends in better machining results, faster production, greater versatility, maximum operator convenience. The machines shown here assure "complete coverage" of your needs for both toolroom and production work. Note the trim, clean-cut lines . . . the provisions for operator comfort . . . the ample storage space for tools and accessories. And remember—the Elgin Bench Tools shown in the large illustrations (with exception of Vertical Miller) are equipped with the **VARIABLE SPEED DRIVE** which permits instant changes of spindle speeds over a wide range of RPM without stopping spindle and shifting belt. Operator is encouraged to use proper speed for each operation, changing as often as necessary . . . which means closer precision, better finishes. Write for specifications, prices, delivery dates!

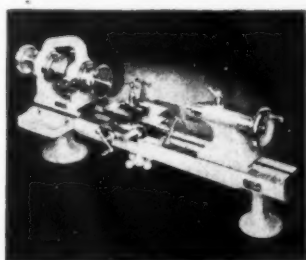


Elgin Horizontal Bench Milling Machine

Variable Speed Drive, 85 to 2750 RPM. Collet capacity, 1". Table 4 1/2" x 18". Longitudinal travel, 12". Transverse travel, 6". Vertical travel, 6".

**1772 BERTEAU AVE.
CHICAGO 13, ILL.**

**Two
Lathes
at Right**
(reading top
to bottom)

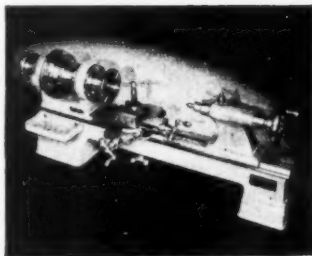


**(Upper) Model CB-5C
Precision Bench Lathe**

Open Cone Headstock, 1" collet capacity, 9" swing, 17" between centers, 36" bed. Speeds up to 4000 RPM. Flat belt only.

**(Lower) Model 4EV
Precision Bench Lathe**

Open Cone V-belt Headstock. For either V or flat belt. 7/16" collet capacity, 7" swing, 17" between centers, 32" bed. Speeds to 10,000 RPM.



**ON DISPLAY
IN ACTION**

AT
BOOTH 510



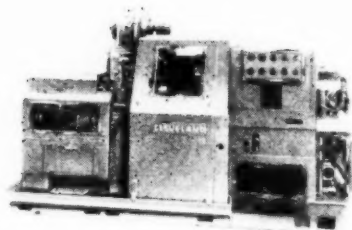
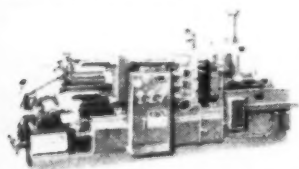
Dodge Chicago Plant

PRODUCTION MEN:

Three versatile Cleveland Automatics and two Cleveland Die Casting Machines will be in full operation at the Machine Tool Show, Booth 510.

Take this opportunity to inspect Cleveland design—at close range—for the latest advancements in automatic screw machine engineering and high-pressure hydraulic die casting machinery. Write now for bulletins.

**Remember
CLEVELANDS CUT COSTS!**



The New Dialmatic **CLEVELAND** **Model AB 2½" Single Spindle Automatic** **with Infinitely Variable Tool Feed Drive**

DIALMATIC TOOL FEED. Infinitely variable feed settings (forward and return) are pre-set on control panel for each of five turret stations. Feed rate is adjustable while any tool is cutting.

CONVERTIBLE. This new Cleveland is the only single spindle automatic that is rapidly convertible from a bar type machine to a chucking machine.

ANTI-FRICTION Spindle Head
Timkenspindlebearings.

Four automatic spindle speeds (forward or reverse) 128 spindle speed selections ranging from 24 r.p.m. to 1800 r.p.m.

CROSS SLIDES. Long front and rear cross forming slides provide a wide tooling area. Smooth operation under heavy forming cuts.

TURRET-INDEXED BY GENEVA MOVEMENT. Four-slot Geneva indexing mechanism provides smooth, rapid, shock-free indexing.

2 CLEVELAND Die Casting Machines **Model 400 and the new Model 200**

Two tremendously powerful high-pressure hydraulic die-casting machines capable of fast, accurate, dependable casting production.

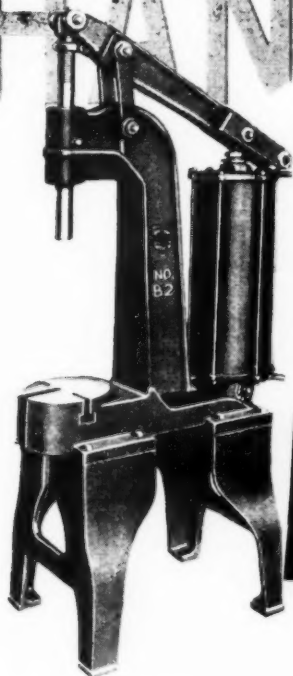
High pressures with strength to resist stretch, distortion or breakage. These machines have large die area—easy access to dies. Sure-fire shot mechanism. Rapid, positive core pulling and ejection. Simple, full automatic control.

THE CLEVELAND AUTOMATIC MACHINE CO.

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**Do It the Modern Way . . .
Let Compressed Air Supply
the Pressure!**

Use Hannifin pneumatic arbor presses! 30 different models to choose from: ram strokes up to 15 inches . . . daylight up to 46 inches . . . reach up to 12 inches . . . bench and floor types . . . hand or foot control . . . capacities to 45,225 lbs. with 100 lb. air pressure. For information, ask for Bulletin No. 46-Z.

PNEUMATIC *Arbor* PRESSES

"PACKLESS"

AIR CONTROL VALVES . . .

For better performance, better control, less maintenance nuisance, and freedom from air waste, use Hannifin "Packless" Control Valves on air cylinders . . . arbor presses . . . air operated equipment! Non-creeping, bronze disc type, ground and lapped with body, makes perfect, long-life seal. Ask for Bulletin No. 37-Z.

Booth 411, Machine Tool Show

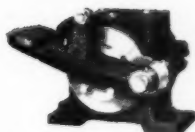
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Air Cylinders • Hydraulic Cylinders • Hydraulic Presses
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For Foot Operation

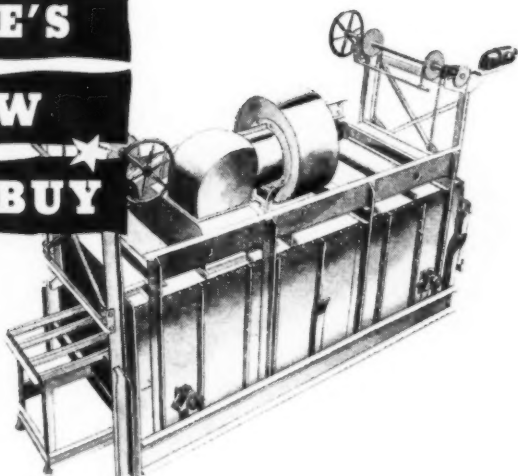
- 12 different models.
- 3 different types.
- Spring return.
- Sizes, $\frac{1}{4}$ " to $\frac{3}{4}$ ".
- 3-way or 4-way action



For Hand Operation

- 20 different models.
- 4 different types.
- Duplex and manifold types.
- Sizes, $\frac{1}{4}$ " to $1\frac{1}{4}$ ".
- 3-way for single action or 4-way to double action.
- Also electrically operated valves.

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★ HOW
★ YOU BUY**



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This booklet is designed to aid you in selecting the type of Furnace or Oven you need, it shows you how to prepare submission of exact specifications.

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Please send me your booklet called "Industrial Furnaces and Ovens."

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A great many types of this highly specialized equipment are located throughout the country. All you need do to locate the particular Furnace or Oven for your specific job, is to fill out the specification sheet in the back of the new WAA booklet. If you have not already received a copy of this booklet, one will be mailed you upon request. Return the specification sheet to the War Assets Administration in Washington. WAA does the rest—and will arrange for inspection of the equipment before purchase.

EXPORTERS:

Industrial Furnaces and Ovens are available for your overseas customers. Act now to fill their requirements.

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STANDARD HORIZONTAL SLIDE TOOL

... With Overhead Pilot

Designed for use on the 5D2-12" and the 5D2E-15" machines — with T-slot on center with the spindles, maximum rigidity is secured by the overhead Pilot. These fixtures are available for both five and six face Turrets. The obvious sturdiness and rigidity of the horizontal slide for holding the cutter blocks is assurance of rapid and accurate stock removal to the limit of the cutters. The Slide Tool T-slot has ample space for cutter blocks to machine work pieces at the front and at the rear of the double-spindle, double-production machines.

This Slide Tool also may be used for internal recessing cuts, as well as for taper boring or turning with the proper cam path fastened to Cross Slide Base of the bed of machine.

Production cost will be a critical factor in the post-war world. This helpful catalog will present you with many constructive ideas that will assist you in making your Potter & Johnston machines more productive. If you are a user of our machines it will be sent to you, on request.

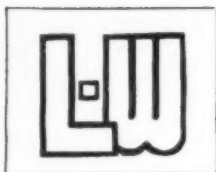
This versatile tool is one of a broad line of production aids available for reducing manufacturing costs.

The **POTTER & JOHNSTON**
MACHINE CO., PAWTUCKET, RHODE ISLAND

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

129



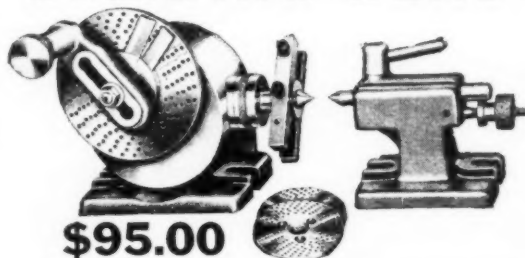


ANNOUNCING THE NEW L-W Model SD 6-1/2" UNIVERSAL DIVIDING HEAD

Well built for hard daily usage on smaller milling machines. Rugged head and tailstock.

Alloy steel spindle has a tapered bearing. Bored for No. 4 B & S taper threaded spindle nose. Head tilts to 90° in vertical position. Special alloy steel worm and bronze worm wheel cut to close limits for accuracy. End thrust is taken out by bronze bearings.

Complete with three index plates for dividing all numbers to 50, and even numbers to 100, with the exception of 96T. Index chart shows all divisions obtainable to 380.



\$95.00

L-W 11" UNIVERSAL DIVIDING HEADS

Headstock — Rugged, Rigid. Swivels to any angle.

Tailstock—Sturdy. Withstands heavy cutting.

Headstock Spindle — Tapered bearings, bored for No. 10 B & S Taper, increased diameter and length. Threaded spindle nose, 2 1/2" diameter 10 thread USS.

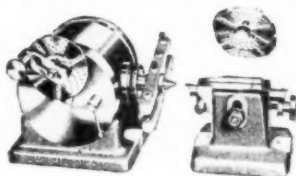
Worm — Special alloy steel, accurately finished ball bearing end thrust. Easy, accurate adjustment of worm wheel.

Worm Wheel—Large diameter, 40:1 ratio, accurately generated, securely mounted on spindle.

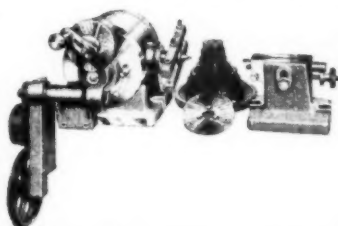
Equipment — 5/8" table slot tongues, three index plates, dividing all numbers to 50, and even numbers to 100, with the exception of 96T. Index chart shows all divisions obtainable to 380.

When ordering AU Heads specify either right or left hand model.

**Model BP for
Plain Milling
Machines
\$151.20**



**Model AU Fully
Universal for
Complete
Indexing and
Spiral Cutting
\$219.15**



Send for complete catalog giving prices and specifications on these quality, low-cost L-W Products



HAND-OPERATED



HAND-OPERATED



DIVIDING HEADS



REVERSE



REVERSE



REVERSE



REVERSE

L-W CHUCK COMPANY

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TOLEDO 4, OHIO

It's a FAST Worker!



***American*
V-EIGHT**

- The new V-Eight Grinding Wheel made in cups, cylinders, segments and straight wheels cuts exceptionally fast and holds its corners. Every day it sets new records on surfacing and cylindrical applications in tool rooms and production lines. The unique open structure gives maximum cooling . . . permits unusually heavy cuts. Test the "American" V-Eight in your own shop on tool and die steels — high carbon, Hi-Chrome, Chromovan, etc. Write for information.

The V-Eight Series wheels are of vitrified bond — available in 77 Aluminos (full friable) and 22 Aluminos (semi-friable) abrasives; hardnesses up to grade K inclusive and grit sizes up to 100 inclusive.

AMERICAN EMERY WHEEL WORKS

7 RICHMOND SQUARE, PROVIDENCE 1, R. I.

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Gage Costs —**



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SIZE CONTROL
Booth 401 Machine Tool Show**

**85%
REDUCTION
IN
GAGE
COSTS**

**REVERSIBLE
GAGES ARE
ECONOMICAL**

**10,000
REVERSIBLES
A MONTH**

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FOR THE
PRICE OF
3**

At Booth 401 you will not only see a comprehensive line of advanced gages—you will learn how to cut your gage costs to an absolute minimum, while reducing rejects and speeding inspection, with SCC REVERSIBLE Gage.

You save substantially in two ways with long-lasting Size Control REVERSIBLE Gages—reduced plug replacement costs . . . reduced possibility of passing sub-standard parts. The tips of the extra long reversible plugs can be cut off when worn for up to 6 times service. Available in plain or plated steel or Stellite, NORBIDE, Tungsten Carbide and Sapphire.

Size Control has saved industry the cost of millions of gages through originating reversible plug gages, which the American Gage Design Committee has tentatively recommended as an alternate to the regular standard design.

Catalog 47 contains complete information.

**TRUE PRECISION FINISHES
WITH FAST CENTERLESS LAPPING**

Size Control's Centerless Lapping Machines give a precision finish of less than 2 micro inches to cylindrical parts of materials such as steel, carbide, NORBIDE, glass, sapphire. Requires no special operating skill—piece is simply placed between lapping rolls. No costly set-ups or special tools. Handles diameters from .010" to 10.00" with speedy adjustment of roller spacing. Fully described in Catalog 47. Used by: Greenfield, Pratt & Whitney, Sundstrand Machine Tool Co., International Business Machines Co., Firth-Sterling Steel Co. and many others.



SIZE CONTROL COMPANY

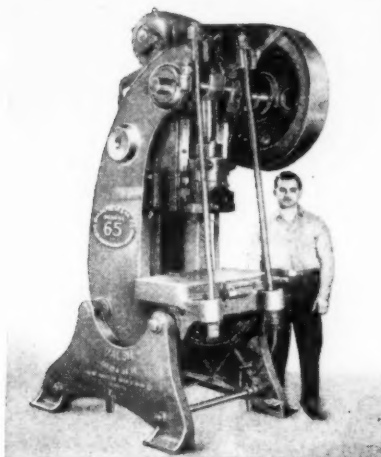
MAKERS OF PLAIN, THREADED, AND TWIN PLUG GAGES . . . THREAD RINGS, SNAPS
THREAD, GEAR, AND SPLINE WIRES . . . PIN AND DRILL GAGE SETS, FRACTIONAL SETS

2510 W. Washington Blvd., Chicago 12, Ill.

Phone: Monroe 6710

**DIVISION OF
AMERICAN GAGE & MACHINE COMPANY**
WACKER SALES, Affiliate
Precision Gages Punch Presses Precision Inspection Equipment
Engineering Representatives in Principal Cities

The NEW Walsh Press Line!



No. 65 Press. This new 65-ton Walsh Press embodies advanced features which yield higher standards of press performance. Fully described in Bulletin 447.

SEE WALSH PRESSES AT THE MACHINE TOOL SHOW

Inquire at Size Control Co.—Booth 401;
and at Dayton Rogers Exhibit Booth 14-C

WALSH PRESS SAFETY DEVICE

Standard equipment on every Walsh Press and adaptable to presses of all makes. The Walsh Two-Button Safety and Non-Repeating Device assures absolute safety and eliminates the need of skilled operators. Shown and described in Bulletin 447.

Available Now—

O. B. I. PRESSES 6 TO 90 TONS

A 10-fold increase in production over the past two years makes most sizes of Walsh Inclined Presses available from stock. Also horn presses, straight sided presses and special presses.

Note these characteristics of Walsh Presses:

STRONG—as pressmen put it, "Walsh Presses have plenty of guts." Walsh puts extra strength in the right places.

ACCURATE—all the precision "know how" of Walsh's affiliate, Size Control Co., is built into Walsh Presses.

SPEEDY—can be run at top speed because the parts are precision ground, balanced and surface finished to Brush Analyzer Standards.

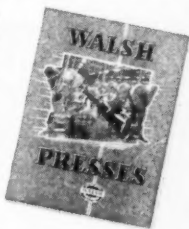
SAFE—The Walsh Safety Device is but one of the features which give Walsh Presses a top safety rating.

ECONOMICAL—In terms of actual production, running time and maintenance, Walsh Presses show bottom ultimate cost.

24-HOUR REPAIR SERVICE—Walsh stocks a complete inventory of parts for all its standard and special presses.

Send for Bulletin 447

It's a real guide to more profitable press operation. Contains full specifications on 10 standard models, and shows the features that make Walsh Presses your logical choice.



WALSH PRESS & DIE CO.

4721 W KINZIE ST. CHICAGO 44, ILL.

PHONE ESTEBROOK 6700

DIVISION OF

AMERICAN GAGE & MACHINE COMPANY

SIZE CONTROL CO.

WALSH PRESS AND DIE CO.

WACKER SALES DIVISION

Precision
Gages

Punch Presses

Precision Inspection
Equipment

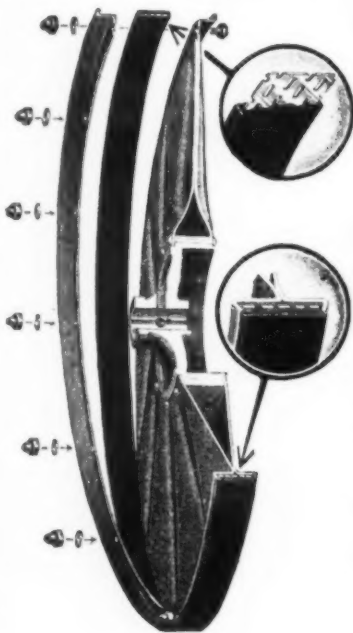
Engineering Representatives in Principal Cities

MORE SPEED

FOR BAND SAWS

Operate your old
band saw at higher
speeds with

CARTER RIGID WHEELS and QUICK-CHANGE DEMOUNTABLE TIRES



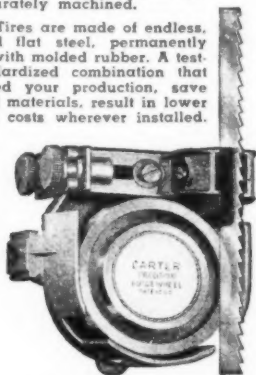
CARTER MICRO- PRECISION GUIDES provide absolute control of saws at all speeds.

Supporting saw blades rigidly close to the work, Carter Guide Wheels give absolute control over the saw and can be lowered very close to the work. Your bandsaw blades last longer, cut better, produce more.

Write for Illustrated Information.

Applicable to all 30" and 36" saws of standard design, Carter Wheels and Tires enable you to attain speeds up to 1800 r.p.m. while eliminating 90% of sawing accidents and interruptions. Wheels are perfectly balanced, of welded construction, accurately machined.

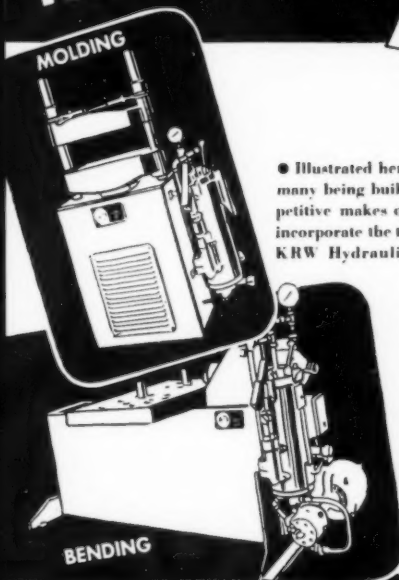
Carter Tires are made of endless, perforated flat steel, permanently covered with molded rubber. A tested, standardized combination that will speed your production, save saws and materials, result in lower operating costs wherever installed.



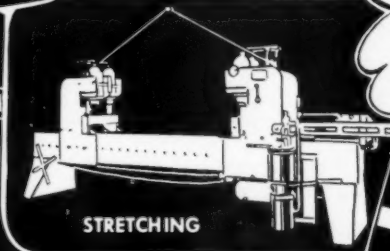
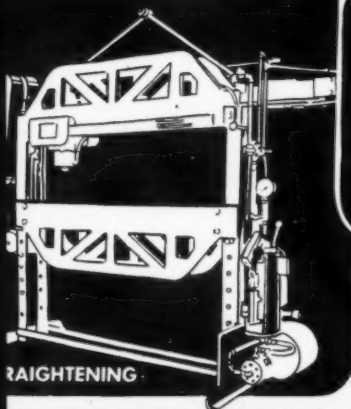
**CARTER
PRODUCTS CO.**
960 Mich. Trust Bldg.
Grand Rapids 2, Mich.

Name the JOB!

There's a KRW PRESS that can do it BETTER...for LESS



● Illustrated here are four KRW Hydraulic Press adaptations that are typical many being built by KRW today. All are priced from 30 to 200% less than competitive makes of comparable tonnages or capacities. All are motor-driven incorporate the time and production proven features that have made the star KRW Hydraulic Arbor Presses...the most widely used press of their type in America. Take the KRW Sliding Head Straightening Press as an example. This type KRW Press has been effecting tremendous labor savings in fabricating plants where plate must be "lapped up" before it is processed or fabricated. The heavy, hand machine formerly used was archaic and very costly by comparison. The same story holds true of KRW Stretcher-Levellers, KRW Bending and Forming Presses, KRW Compression Molding Presses, KRW Bending Presses and many others. To save your time, ours, tell us your problem in terms of what you want to accomplish. We'll give you an answer and furnish literature pertinent to your needs. Mail the coupon now.



Write for the
**NEW
KRW
Catalog.....**



K. R. Wilson, 215 Main Street, Buffalo 3, N. Y.

Please send your catalog. We are particularly interested in you

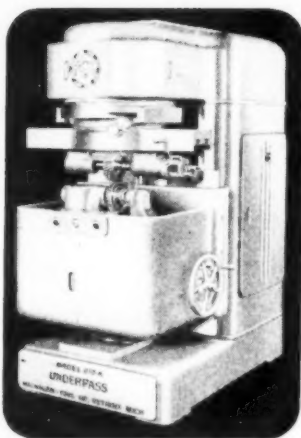
Bending Presses ☐ Compression Molding Press ☐
Straightening Press ☐ Stretcher-Leveller ☐ Forming a
Blanking Press ☐

First Name _____
Address _____
City and Zone _____ State _____

K·R·WILSON

115 MAIN ST. · BUFFALO 3, N. Y.

See it at the
Machine Tool
Show
Booth 426



Write for
Bulletin
No. 870 A 47

Announcing

THE NEW MICHIGAN 870-A UNDERPASS

3-WAY
GEAR FINISHER

•
**FASTER LOADING
AND UNLOADING**

•
FASTER SET-UP

•
**SMOOTHER
OPERATION**

The new Michigan 870-A Gear Finisher not only brings UNDERPASS GEAR FINISHING to a new peak of accuracy, efficiency and speed (12 to 55 seconds, depending on the gear), but also makes available in the same machine two other preselective methods of gear finishing:

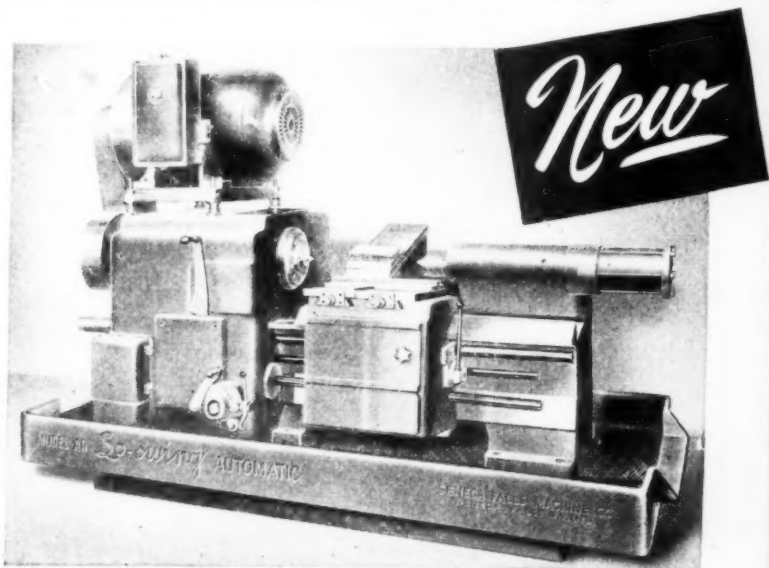
“Transverse” shaving for extremely wide face gears and splines and—

“Traverpass” shaving for finishing fairly wide gears with narrow cutters (faster than “Transverse”, although not as fast as “Underpass”).

MICHIGAN TOOL COMPANY
7171 E. McNichols Road, Detroit 12, U.S.A.

MACHINE OF THE MONTH

PREPARED BY THE SENECA FALLS MACHINE CO. "THE Lo-swing PEOPLE" SENECA FALLS, NEW YORK



Announcing the **NEW** Model AR Lo-swinging AUTOMATIC LATHE

● This new Lo-swing lathe takes its place between the fast operating Model LR and the Heavy Duty Model R-14. It has all the well-known advantages of the positive cam-operated machine combined with new features and refinements which assure ease of change-over, operating control, and a flexibility never before obtained in a 100% mechanically-operated lathe. Increased rigidity, improved spindle mounting and higher spindle speeds are provided to take full advantage of the fast cutting speeds possible with carbide tools.

Foremost of Model AR's features is the INSTANTANEOUS TOOL RELIEF CONTROL MECHANISM which reduces tool breakage and down time. In case of breakage of any one tool, the operator merely

pushes a control lever which reverses the rotation of the feed mechanism, thereby returning carriages and slides to starting position, without disturbing timing of the slides or setting of the tools.

Model AR, likewise, is equipped with the Seneca Falls SIMPLIFIED CHANGE-OVER MECHANISM.

All cams may be pre-set to graduated dials for desired length of cut...eliminating loss of time through the old cut and try method. Other features include a new type front carriage designed to facilitate loading and unloading of parts, and a new type pan which considerably increases chip capacity and simplifies chip removal.

This newest member of the Lo-swing lathe family will be shown for the first time at the Machine Tool Show.



PRODUCTION COSTS ARE LOWER WITH Lo-swing

NEU-T-ROL

Magnetic
Chuck
Controls

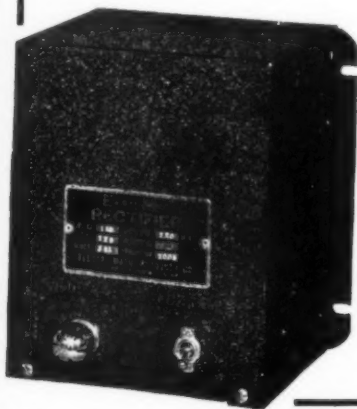
DO YOU USE MAGNETIC CHUCKS?



If so, you need these modern aids for maximum chuck performance.

NEU-T-ROL Magnetic Chuck Controls speedily release and demagnetize workpieces. With NEU-T-ROL, there's no need to hammer or pry to release the work. This saves time and tempers — saves marred, distorted workpieces and prevents damaging of chuck faces. NEU-T-ROL also protects chucks against harmful voltage surges.

ELECTRO-MATIC Rectifiers are sturdy, heavy duty d-c current supply units, engineered to "stand up" day-after-day in the hardest service. They are available in 42 models in capacities ranging from 125 to 3000 watts.



NEU-T-ROL and ELECTRO-MATIC Rectifiers can be installed easily on equipment already in use — or built into new machines before delivery if you so specify.

Let us send bulletins giving full information—no obligation.

ELECTRO-MATIC PRODUCTS CO.
2235 North Knox Ave., Chicago 39, Illinois

ELECTRO-MATIC
Industrial
Rectifiers



See . . .

NEW production application of a standard Gorton Pantograph machine with special fixtures performing a complicated impeller blade milling operation—completely automatic.

NEW Horizontal Milling Machine (Plain Type) . . . engineered from the ground up for greater productivity.

NEW Profiling and Routing Mill . . . greater versatility, sensitivity, accuracy and operator convenience.

NEW Gorton Die and Mold Duplicator and Profiler.

NEW 3-Dimensional Pantograph machine . . . designed for greater sensitivity, rigidity and ease of adjustment.

NEW Lightweight UNIMILL (Universal Milling Head) . . . adaptable to all horizontal milling machines.

IMPROVED Swiss-Type Automatic Screw Machine.

Universal and Bench Type Cutter Grinders.

Four other interesting and practical examples of Gorton Tracer-controlled Machines.

GEORGE GORTON MACHINE CO.

Tracer Controlled Milling

1409 13TH STREET • RACINE, WISCONSIN U. S. A.

NOW DON'T FORGET

... Gorton Tools of Tomorrow ... National Machine Tool Builders' Show Dodge Chicago Plant, Booth No. 2 ... Just West of Registration Section

... September 17-26 Inclusive 10:00 A.M. to 5:30 P.M. daily except Sunday

MOORE Announces

ANOTHER Great Jig Borer

You purchased 1,000 Moore Jig Borers during the last 15 years. So outstanding is their performance record that impartial judges call the Moore Jig Borer "the best machine tool for the money built in the United States".

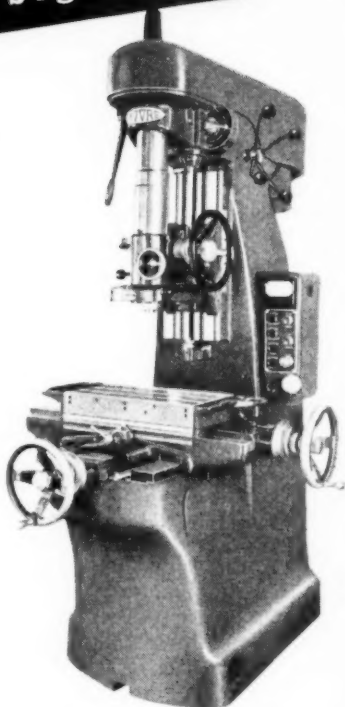
In answer to popular demand, Moore now consolidates this extensive experience into a larger model and incorporates into it the ultimate in jig borer construction. The new No. 2 model extends the exclusive Moore principle of accurate lead screws, assuring precise, rapid table settings within 0001" by coordinate location, and adds numerous significant features, including:

1. Increased capacity and size - heavier cuts, larger holes - up to 5" in mild steel or cast-iron.
2. Infinitely variable spindle speeds, push-button controlled - range from 90 to 2400 RPM.
3. Three power feed ratios, .0015", .003", and .006", per revolution of spindle in either direction.
4. Centralized control panel (and tachometer) for spindle speeds and one-shot lubrication.
5. Disconnect clutch for easy indicating.
6. Satin chrome finish on all dials and handwheels eliminates glare and rust.
7. Trip mechanism prevents jamming of lead screw nuts through over-travel.
8. Totally enclosed drive mechanism - no open belts or sheaves.

Moore No. 2 Jig Borer Specifications

Table working surface	10" x 19"	Vertical adj. quill housing	10"
Table travel longitudinal	18 1/2"	Spindle quill travel	5"
Table travel crosswise	10 1/2"	Spindle center to column ways	10"
Table top to spindle end	min 3" max 18"	Spindle cen. to col. below ways	11 1/2"

Send for descriptive literature.



HAVE YOU BOUGHT YOUR COPY OF "PRECISION HOLE LOCATION"?

Over 5,000 copies of this valuable book on toolmaking practices have been sold to date. Available at special price of \$3. 446 pages, over 400 illustrations, 184 pages of Woodworth Coordinate Location Tables from 3 to 100 holes. Send check or money order to Moore Special Tool Co., Inc. Bridgeport 7, Conn.



MOORE'S Famous No. 1 Model Remains in the Line

For its range-table working surface of 10" x 16" and cuts up to 3 1/2" - this machine with 1,000 satisfied users is still an ideal buy and will be continued to be offered for the many situations where a small, accurate jig borer fills the required prescription.

MOORE SPECIAL TOOL CO., INC.
728 UNION AVE. BRIDGEPORT 7, CONN.

Add a MOORE to

JIG BORERS • JIG GRINDERS • PANTO-CRUSH WHEEL DRESSERS

2 New Toolroom Aces

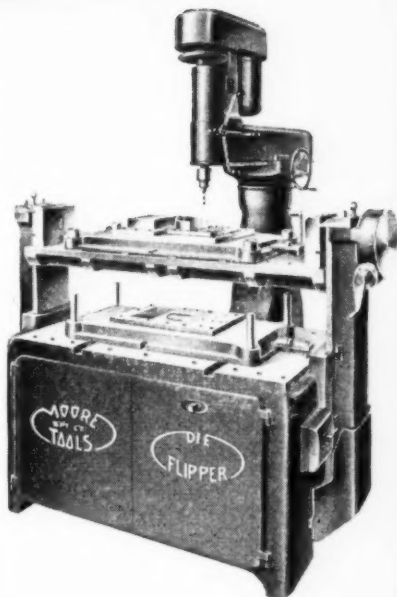
Diemaker's Tryout & Assembly Machine

The vital process of trying out and assembling dies, long a time-consuming and hand-labor ordeal for skilled, highly paid toolmakers, has now been "mechanized" with the development of the Moore Die Flipper. Created and first used in the Moore Toolrooms, whence came the famous Moore Jig Borer and Moore Jig Grinder, the Die Flipper offers the following advantages:

Without physical effort one diemaker can do all the operations of die-assembling: take apart, turn over, drill, tap and try out.

Punch-holder and die shoe are always clamped securely to machine—no more pinching of fingers or dropping of heavy parts.

The Moore Die Flipper will be a money-maker in your toolroom from the start, for besides these important functions it can be kept busy as a radial drill on angular as well as straight holes. It offers speeds of 200 to 1200 RPM and drills holes up to 1 1/4".



SPECIFICATIONS

Working surface of base	24" x 40"
Working surface of platen	14" x 40"
Working surface of base to floor	27"
Platen vertical travel	15"
Working clearance of base to platen (compared with press specifications) with platen above index plates	Min. 9" Max. 24"
Distance—working surface of base to top of platen, with working surface up. (See cut)	Min. 7" x Max. 18"
Platen vertical travel	15" Hand or Power
Platen rotation	360°, Hand only
Drill speeds, infinitely variable	200-1200
Drill sizes	up to 1 1/4"
Nose of drill chuck to working surface of base	Max. 24"
Nose of drill chuck to working surface of platen, quill up (see cut)	Min. 6" Max. 17"
Quill travel	5 1/2"

The Moore "Die Flipper" will take apart and flip over a die set 20" x 40" with 12" shut height, pins engaged in bushings 4".

It takes hours of laborious work by 3 or 4 skilled diemakers to assemble and test a die...whereas with the "Die Flipper" one man can quickly and efficiently test alignment, drill punches in place, tap for screw holes, hand stone, make visual inspection...also use as a radial drill.

Send for descriptive literature.

MOORE SPECIAL TOOL CO., INC.
728 UNION AVE., BRIDGEPORT 7, CONN.

YOUR Toolroom

DIE FLIPPERS • COMPLETE LINE OF HOLE LOCATION ACCESSORIES

WE INVITE YOU TO ATTEND THE GREAT

Production and Machine Tool Show



HOW TO GET THERE FROM THE CHICAGO LOOP

The International Amphitheatre, where The Production and Machine Tool Show will be held, is located at 42nd and Halsted Streets, in the geographic center of Chicago and only three miles from the loop. It is easily reached by elevated and surface car lines, by motor bus or automobile.

By Auto: via Michigan Ave. and 43rd Street.

By Elevated: via Indiana Ave. and Stock Yards Branch, or Special Trains direct.

By Street Cars: via State Street or via Clark Street.

INTERNATIONAL

Machine Tool Show



OPEN 10 A.M.-9:30 P.M. DAILY EXCEPT SUNDAY
AN
OUTSTANDING

EXHIBITION
OF
AMERICAN
AND IMPORTED
Machine Tools,
Production Machines
and Accessories

EASY TO REACH VIA
Elevated Bus
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THE PRODUCTION and MACHINE TOOL SHOW
GRAFTON, WISCONSIN

AMPHITHEATRE: CHICAGO, ILL. ★ ★ SEPT. 17-26

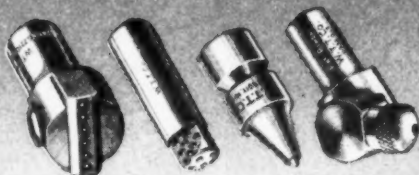
STANDARD WHEEL DRESSING TOOLS

LARGE CONICATED CENTERLESS MORTON WELD



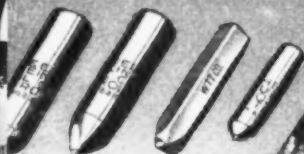
SPECIAL FEATURE DRESSING TOOLS

STRAIGHT-SIX IMPREGATED EVERHARDT TUBES



THREAD DRESSING TOOLS

NO. 10-400 NO. 10-401 NO. 10-402 NO. 10-403



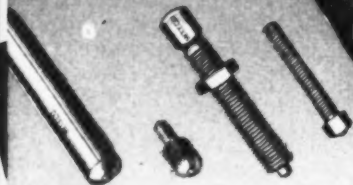
TURNING AND BORING TOOLS

V-POINT FULL RADIUS OFFSET TURNING



GAGE TOOLS

NO. 1 SHEFFIELD PRATT PRATT & WHITNEY



RADIUS FORMING TOOLS

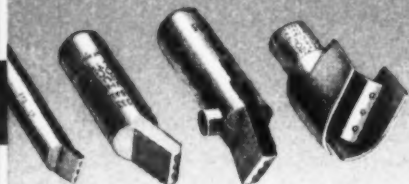
No. 1 No. 2 No. 3 No. 4



LOOSE
DIAMONDS

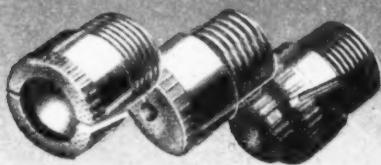
PATENTED TRU-LINE TOOLS

NO. 110 SAE 11 NO. 111 VERTICAL SWIVEL TRIPLE HORN



DIAMOND DRILL BITS

CORE BLAST HOLE PILOT



***"We can guarantee our
diamond tools because
they are engineered
to the job."***

Harry J. Wallace
PRESIDENT



THIRTY-SEVEN YEARS AGO, when Wheel Trueing started in the diamond business, there were no standards of diamond tool value and guarantees were specifically avoided.

Wheel Trueing pioneered the idea of studying the job to be done, engineering the tool and the diamond to the job and guaranteeing satisfactory performance.

Consequently, for many years, Wheel Trueing customers have enjoyed the efficiency and the economy of using diamond tools scientifically matched to their work.

Our Engineering Data Sheets for supplying job information and our booklets on many types of Standard and Special diamond tools are yours for the asking. We invite your inquiries.

**WHEEL TRUEING
TOOL COMPANY**

3200 W. Davison Avenue • Detroit 6, Michigan

**WHEEL TRUEING TOOL CO.
OF CANADA, LTD.**

575 Langlois Avenue • Windsor, Ont., Canada

THE ADAMANT TOOL COMPANY

Eastern Division of Wheel Trueing Tool Co.

33 West Street • Bloomfield, New Jersey

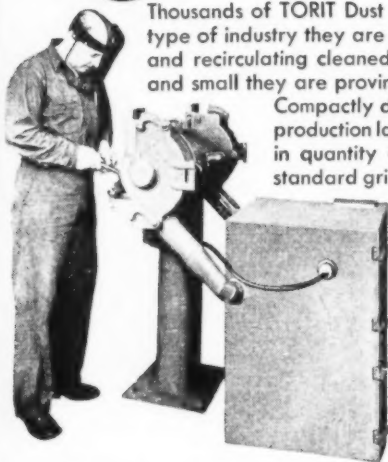
General Offices & Plant, Detroit, Michigan





**You can grind out production records
when you eliminate the dust menace with**

TORIT DUST COLLECTORS



Thousands of TORIT Dust Collectors are now in use. In every type of industry they are trapping abrasive dust at its source and recirculating cleaned air into the room. In large plants and small they are proving economical to own and operate.

Compactly designed TORIT Dust Collectors fit all production layouts. They are now being produced in quantity and sizes and capacities to fit all standard grinding, polishing and cut-off machines are available for immediate delivery. For complete information and latest TORIT catalog write:



TORIT Manufacturing Co. 303 Walnut St. • St. Paul 2, Minn.

PROSSER

Carbide Grinders



MODEL
AA



MODEL
EE

For fast, efficient rough grinding and fine finishing of carbides, stellite, high speed steel, and other modern tools, install Prosser Carbide Grinders. Their rugged construction, modern design, and ease of operation insure long, dependable and profitable service.

Pros. Carbide Grinders are built in bench and floor models of several capacities, for wet or dry grinding. Attachments for chip breaker and drill grinding.

Important features include:

- Quick-acting indexing tables.
- Adequate wet-grinding equipment.
- High grade ball bearing spindles.
- Oversize wheels, giving longer wheel life, and permitting grinding of larger tools.
- Moderate price.
- Prompt deliveries.

Write for details

Thomas Prosser & Son
120 WALL STREET • NEW YORK 5, N. Y.

*All Lovejoy Blades for
Type "A" Milling Cutters
are interchangeable from
4½" to 24" in diameter.*



DESIGN

A complete engineering service, backed by an experienced staff, is at your service to make recommendations and design special cutters.



RANGE

Hundreds of sizes, dozens of models to meet every requirement, regardless of machines used or materials to be cut.

SERVICE

Even special tools use standard parts which are stocked by us. There are 30 Lovejoy service centers throughout the U.S.A. — there is one near you.

SATISFACTION

Nearly 30 years' continuous experience making milling cutters and other "Positive-Locking" tools. Our first customers are still buying our tools.

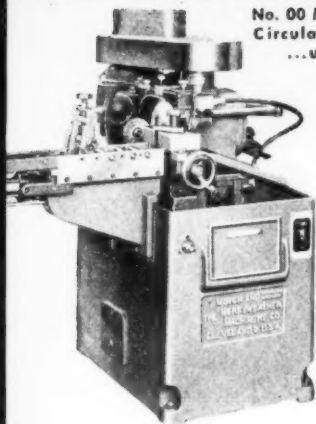
LOVEJOY Type "A" Face Milling Cutters offer complete interchangeability of H.S.S., carbide and cast alloy blades in housings from 4½" to 24" in diameter. Thus you can take advantage of Lovejoy's prompt delivery of standard blades from stock — can eliminate the need for carrying large stocks of blades yourself. This feature, plus husky, forged steel housings, plus unsurpassed ability to remove metal quickly, accurately and smoothly, makes Lovejoy Type "A" mills outstanding for production economy.

The Type "A" blades are held in the housing with the famous Lovejoy "positive-locking" device. This means that a minimum of stock must be removed when sharpening. It allows utilization of a large per cent of each blade. It holds the blades immovably, even during heavy, intermittent cuts.

Type "A" face mills are available for all standard arbor and spindle mounts, and for either positive or negative rake cutting.

See these milling cutters and the rest of the complete, modern line of Lovejoy tools at the Machine Tool Show, Booth 153.

LOVEJOY TOOL COMPANY, INC.
SPRINGFIELD, VERMONT, U. S. A.



No. 00 M. & M.
Circular Saw
...up to 2"

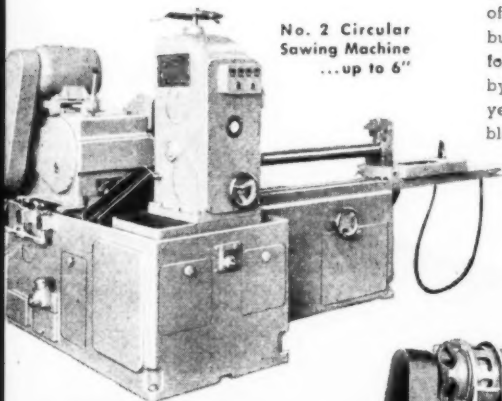


BRING YOUR CUT-OFF COST *TUMBLING DOWN!*

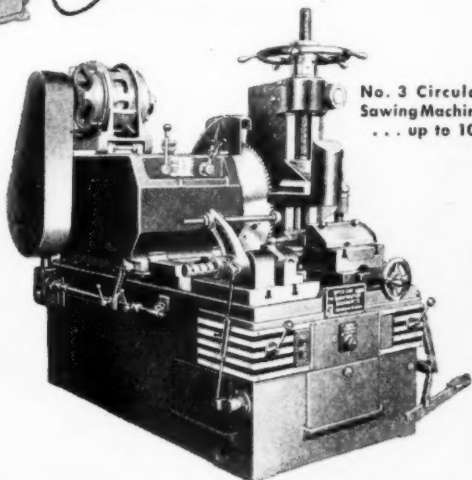
Cutting off is regularly the most expensive operation on the finished part. Let the Motch & Merryweather Triple-Chip Method bring that cost tumbling down. Here is your complete answer—complete in terms of speed, accuracy, uniformity, and sharp, burrless cutting. Exceptional sawing performance is adapted to your requirements by an engineering background of many years given to "building all three": saw, blade, grinder.

★ ★ ★

We'll be glad to talk with
you about it in Chicago.



No. 2 Circular
Sawing Machine
...up to 6"



No. 3 Circular
Sawing Machine
... up to 10"

See Us in Chicago

in the Demonstration Room
of our Chicago representa-
tive, the Bryant Machinery
and Engineering Company,
650 West Washington Blvd.,
Sept. 15 through 30, 10 a. m.
to 9:00 p. m. daily.

Only
M & M builds
ALL 3:
CIRCULAR SAW
SAW BLADE
BLADE GRINDER

THE MOTCH & MERRYWEATHER MACHINERY CO
PENTON BUILDING CLEVELAND 13, OHIO

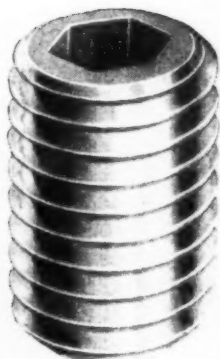
B-RIGHT-ON

SOCKET SCREW PRODUCTS

ARE *Used* ON THE MOST MODERN MACHINE TOOLS



Landis Tool Company's
Centerless
Thread Grinder



B-RIGHT-ON

SOCKET SCREW PRODUCTS

ARE *Made* ON THE MOST MODERN MACHINE TOOLS

Above picture shows B-RIGHT-ON hollow set screw threads being ground on solid, hardened alloy steel blanks by a LANDIS Centerless Thread Grinder.

This modern method of threading produces screws of great accuracy and beautiful finish.

The very modern machine shown above, together with other types of highly productive and extremely accurate machine tools, enables us to offer you service and products which are always

DEPENDABLE

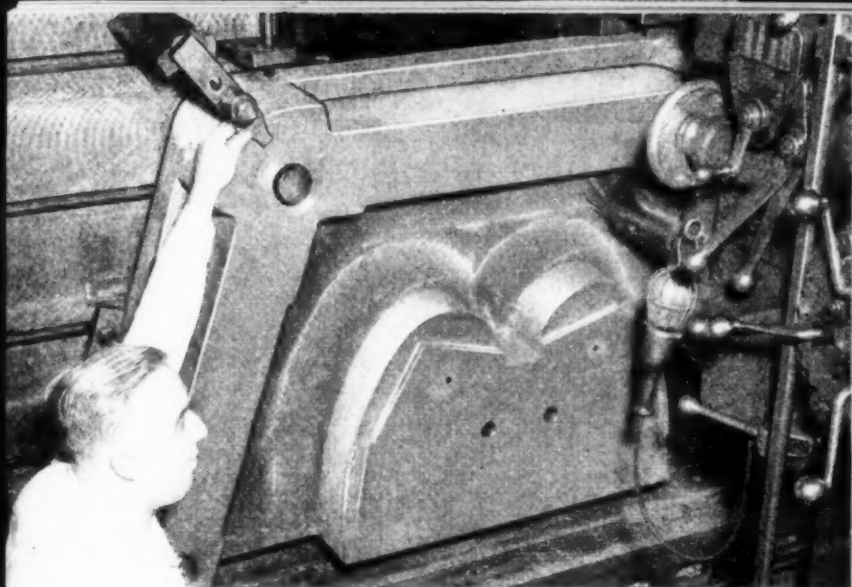
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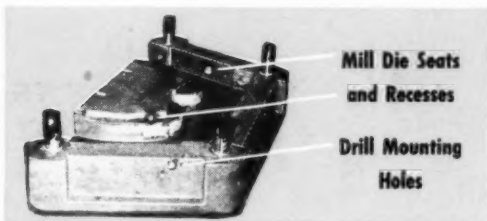
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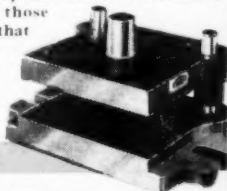


"Mill die seats and recesses; drill mounting holes; mill mounting pads." The work performed on the set shown here is an example of the machining operations that Danly can do for you while your die set is in process. In many cases this necessary machining can be done on the same setup as standard operations on the die set, thereby minimizing setup and handling time.

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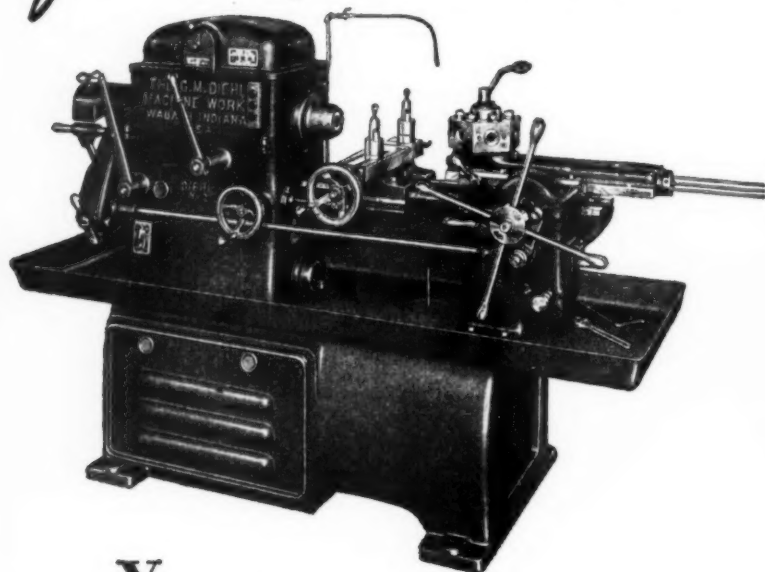
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Featured in this issue

INTERESTING APPLICATIONS OF MULTI-PURPOSE MACHINES by J. H. Mansfield. Here are some interesting case histories on the uses of multi-purpose machines, more commonly referred to as transfer machines. Because of their automatic operation, loading and unloading time is reduced to a minimum. Considerable savings in man power are possible, with appreciable increase in production. Page153

NATIONAL MACHINE TOOL SHOW. Page175

MEETINGS AND SPEAKERS—Many technical sessions will be held in conjunction with the Machine Tool Show. Listed are the participating societies, principal speakers, subjects and places of meetings. Page175

HOW TO GET TO THE SHOW is illustrated by a transportation map, which serves as a guide for motorists. The N.M.T.B.A. has arranged for busses to leave loop hotels for the exhibition site at regular intervals. Page . .184

FLOOR PLAN—A complete floor plan, divided into two sections, is presented to facilitate finding of the various exhibitors. Page188

NAMES OF EXHIBITORS—This represents listing of approximately 99% of exhibiting firms. Booth numbers are given for handy and quick reference. Page197

PRODUCTS TO BE DISPLAYED—For over two months the editors of MACHINE and TOOL BLUE BOOK have been deluged with advance notices of the many new products to be displayed. Page219

The paper situation being extremely tight, it was necessary to condense all notices and illustrate only one item of each manufacturer, indicating in a foot note other products to be

shown. Many items were received too late for inclusion; however, approximately 50% of the exhibitors have a product listing. Page219

OTHER SHOWS TO BE HELD IN CHICAGO—The Production and Machine Tool Show will be held at the International Amphitheatre concurrently with the National Machine Tool Show. A transportation map is included on Page389

HOW TO SELECT HYDRAULIC OILS, by D. C. Miner, discusses the bases upon which hydraulic oils should be selected. Several "musts" and "must nots" are discussed. The proper selection of oils can do much to increase the longevity of machine tools. Page328

DEVELOPMENTS IN PRESSES PROMISE INCREASED PRODUCTION, is an article prepared by the Pressed Metal Institute. Described are the recent advances made in stamping, drawing and punching equipment. Page338

PERSONALITY MORE IMPORTANT IN HIRING ENGINEERS. This is the result of a survey recently conducted to determine the qualities most sought after by employers of potential engineers. Personality and character head the list of desirable characteristics. Page362

LETTER FROM ENGLAND. Page354

WHAT'S NEW IN METALWORKING. Page367

NEWS OF THE INDUSTRY. Page400

AVAILABLE LITERATURE. Page408

NEW TECHNICAL BOOKS. Page421

INDUSTRIAL FILMS. Page423

MECHANICS THROUGH THE AGES. Page450

PRODUCTS INDEX. Page452

INDEX TO ADVERTISERS. Page460

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MACHINE and TOOL BLUE BOOK

September, 1947

As the **editor** **SEES IT**

WHEN MIRACLES COME TRUE

Remember when, in 1943 and 1944 the designers, advertising and public relations men prophesized the post war world would be the best of all possible worlds? A home, completely electronic, in the mountains; a helicopter for transportation; a vacation on the moon or Mars; all drudgery removed from work . . . the promises were pink and glowing. Based on any visible evidence to the contrary, the promised miracles, in most instances, were creatures of enthusiasm; while one day they may materialize in flesh and blood, for the present we had best take refuge with the one industry which has designed, hammered out, packed and shipped the wonders pledged years ago. . . the machine tool industry.

The machine tool industry will unzip its bag of tricks on September 17 and for nine days bewitch the industry with its metalworking magic. The majority of machine tools to be displayed have but two purposes: to cut costs and increase production, reducing non-productive labor time wherever possible.

Thus we find giant forward strides in automatic control of handling and clamping; automatic control of a battery of machines or single units; faster feeds

and speeds that will make the speeds and feeds of war-born machines seem poky by comparison; rapid traverse for approach and return will drastically reduce non-productive, non-cutting time.

The increased demand for precision work in tenths and hundredths of thousands is reflected in machines of stronger rigidity, improved bearing surfaces, and in many instances possess atmosphere control.

Not only machines will mirror the genius of machine tool builders, but chucks likewise proudly bear the badge of improvement. Hydraulic chucks will find many novel applications, magnetic chucks are larger and stronger. One collet chuck sports an electric booster, another has a built-in electric chuck wrench.

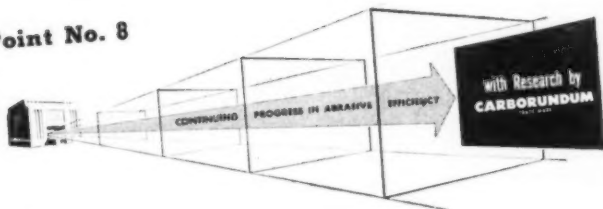
Elsewhere in this issue of the MACHINE and TOOL BLUE BOOK is a list of exhibitors and, wherever information was available by press time, some of the products to be exhibited.

It may safely be said that only a few industries exhibiting at Dodge-Chicago, have not some product liberally seasoned with witchcraft, bearing out the rich promises of 1943-44.

William F. Schleicher
Editor

A BUYING GUIDE FOR ABRASIVES

Point No. 8



Research and Development

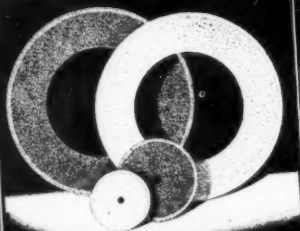
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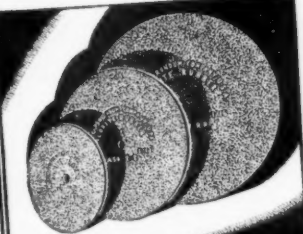


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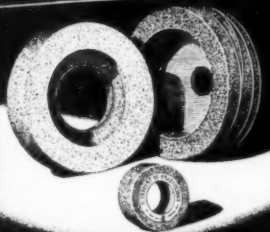
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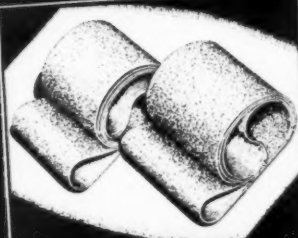
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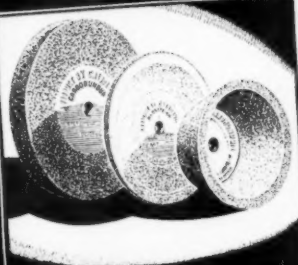
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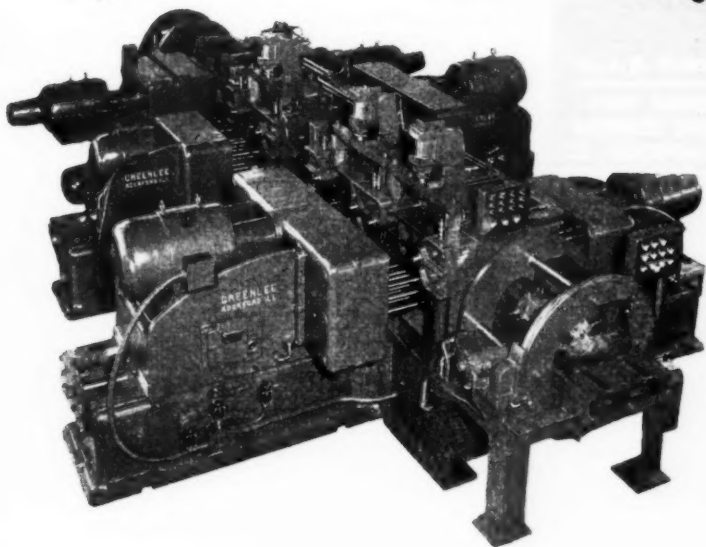
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Interesting Applications of Multi-Purpose Machines



Increased production with a corresponding reduction in costs can be achieved by the use of automatic equipment which reduces the number of men required to perform one or a series of operations. Further, loading, unloading and handling time is cut to the bone, all of which results in an accelerated production cycle. One form of automatic equipment is the multi-purpose machine, of which we will discuss three types in this article: 1. way drilling or tapping machines with one

fixture and one or more heads presenting tools to different faces of the work; 2. horizontal and vertical indexing machines with several work stations and one position for loading and unloading the work; 3. Transfer Machines. The latter type of equipment is frequently referred to as "holeway processing machines," "Automatic processing machines," and "automatic production lines."

Transfer machines offer low cost mass production by combining two old

ideas: material processing and material handling. Integrated in one unit are standard, straight-line production tools and automatic work piece handling equipment. Inasmuch as 40% of the total cost in some types of manufacturing is required for just moving the parts from machine to machine and through the plant, the value of automatic equipment can be appreciated. The majority of today's production lines are composed of unit machines and roller conveyors and each operator must: 1. move the work from the conveyor to the fixture on the machine; 2. clamp it in position; 3. unclamp it after completion of the machine operation; 4. move the work back onto the conveyor; 5. push it on to the next machine.

The transfer machine combines individual machine tools and roller conveyors into one unit. The operator places the work piece in one end of the machine; it passes from work station to work station, undergoing numerous machining operations without an operator handling the part until it emerges at the other end. The work is automatically located, clamped, and transferred to each machine unit. Each transfer machine requires two men; one at each end, regardless of the number of operations performed. However, some machines have been designed that require only one operator. The number of men depends on the number of work stations and on each particular job.

Basically, there are two types of transfer machines. The first is designed for automatic locating, clamping, and transferring on a particular face—such as the oil pan contact face on a cylinder block. The second type handles work that must be fastened to a work-holding fixture with hardened ways that transfers through the machine. The fixture is then unloaded and returned to the infeed end, ready to be reloaded for the next pass. This type makes

possible machining of unusual shaped pieces without a surface for transferring.

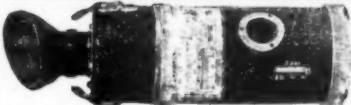
Some production men question the possibility of keeping the transfer machine in continuous operation because of the many electrical and hydraulic controls. Compared with a line of single-station machines performing the same operations, the transfer machine has but a few more controls. Electrical control cabinets on some installations have not been opened for servicing or inspection for more than six months. Hydraulic controls on transfer machines are just as dependable as hydraulic brakes and automatic transmissions in present day automotive vehicles.

Interlocks on the machine prevent the starting of one function, such as: transfer, clamping, machining, and unclamping, before the previous one is completed. Should any trouble occur, lights on the control board flick on and immediately indicate the source of the trouble.

Functions performed by transfer machines can be divided as follows:

1. Transfer to first work station and from station to station.
2. Locate and clamp in each fixture.
3. Rapid approach of tools to work.
4. Feed tools through their cutting cycle.
5. Return tools clear of work.
6. Unclamp and indicate the machine

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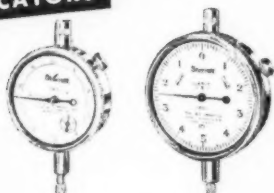
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is clear and ready for the next piece.

Since the operator loads during the cutting portion of the cycle, no time is chargeable to this operation. Useful work is done by the cutting tools during the production part of the cycle; the fourth step above. The rest is idle time.

As in any production machine, efficiency is measured by the ratio of idle time to the time the tools are cutting in each cycle. Another factor must be introduced to cover down time caused by tool changes, operator's personal time away from the machine, and miscellaneous delays. It usually averages 20% of the total cycle, giving an efficiency of 80%.

This is how a transfer machine's output is computed in a typical setup:

- | | |
|--|---------|
| 1. Transfer | 5.0 sec |
| 2. Locate and clamp..... | 2.0 sec |
| 3. Rapid approach of cutting tools | 0.5 sec |

- | | |
|--|----------|
| 4. Tools cutting metal..... | 20.0 sec |
| 5. Return of tools clear of work | 0.5 sec |
| 6. Unclamp | 2.0 sec |

Total 30.0 sec

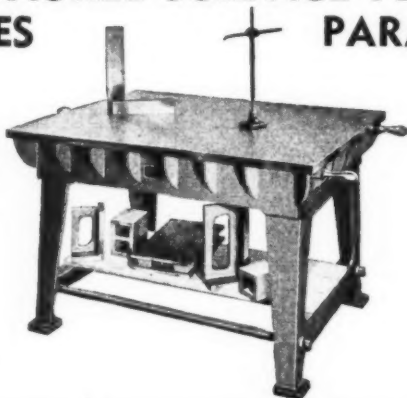
Dividing 3600 (number of seconds in an hour) by 30 sec (total cycle time) indicates a production of 120 pieces per hour at 100% efficiency. If the efficiency is 80%, total hourly production is 96 pieces.

In analyzing a transfer machine, production output is determined by adding the idle portion of a standard cycle to the longest operation completed by any one tool. Cutting speeds and feeds must be so regulated that the heaviest loaded tools run a full shift or more without changing.

Other factors also require consideration when determining production output: hardness of material being machined; rough or finished surface; scale

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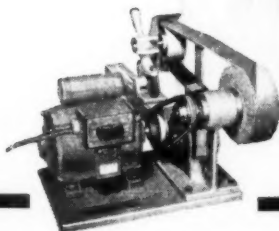
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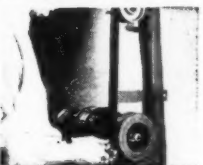
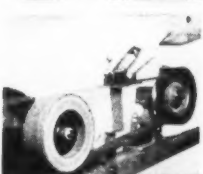


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or no scale. Records must be kept of tools to be changed every shift or every other shift. Some lightly loaded tools will run several shifts.

Deep-hole drilling may necessitate dividing the work among a number of drills at several stations. In drilling oil gallery holes the length of the cylinder block, nine passes may be required to attain the desired production. Since

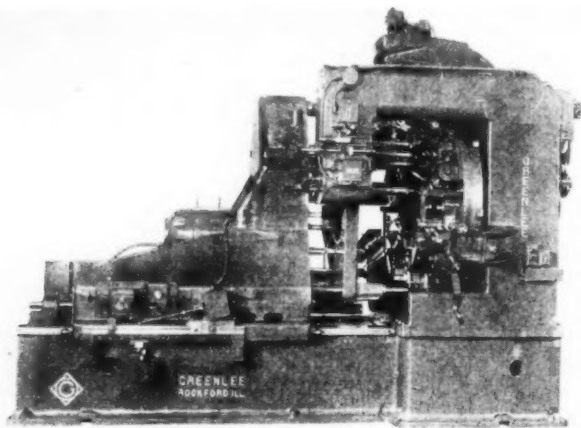
center distances between holes control the size of spindles and bearings, additional stations may be required so that holes on close centers may be drilled by different units. In this way large heavy spindles can be built to run almost indefinitely, an important advantage of the transfer machine. Inspection stations in the machine following important operations can greatly reduce scrap.

INTERESTING APPLICATIONS OF MULTI-PURPOSE MACHINES

Horizontal Indexing Machine

Below is a horizontal indexing machine with an automatic indexing table carrying ten fixtures and one head carrying drilling, boring, facing and reaming tools and a second head for tapping. At the completion of a stroke when the operator has the fixture loaded, he presses the cycle start push button causing the table to index, then the drilling and tapping heads go through their cycle and return to the stop position. The circuit provides for interlocks, preventing the heads from starting on their

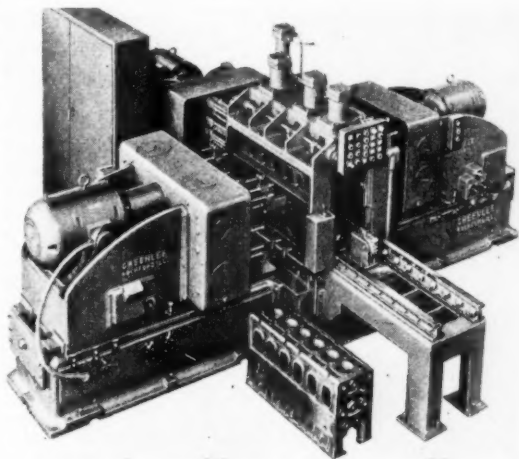
cycle unless the table has completed its index and is located in the proper position. If the operator has loaded the fixture before the machine has completed its cycle, he can depress the start cycle button; when the heads return to the stop position the machine will immediately index and continue the next cycle. The table can be indexed independent of the tool heads which may be hand controlled by means of selector switches. This is necessary while a set-up following a change of tools is being made.



Three-Way Horizontal Drilling Machine

At the right is a three-way horizontal drilling machine with automatic loading and clamping fixture. The operator removes the crankcase from the conveyor line, locates it in front of the fixture, and presses the cycle start button. The case transfers into position, locates and clamps, and the drill heads start in their operating cycle. When the drill heads return the case is unclamped and returned to the loading position, ready for the operator to move it onto the conveyor and reload. In

earlier types it was necessary for the operator to locate the casting in the fixture, clamp it manually, and trip the feed of the heads. Automatic fixtures are favored by a great many production executives because they are easier on operators.



As in the indexing machine, the electric control circuit is interlocked. Each function of the complete cycle must be completed before the next takes place. Selector switches are provided for hand control of any of the functions during set-ups.

Diesel Engine Crankcases

On the next page is one of a group of three very interesting transfer machines for Diesel and semi-Diesel engine crankcases. The machine illustrated drills holes in the bottom and top and a few angle holes in the side of the case, and taps them in the final position. There are 16 stations in the machine, 6 of them working stations; the rest idle. This line was designed to produce a maximum of 25 per hour with an operator on each of the three machines. Each machine delivers cases to an accumulating conveyor or directly to the next machine, depending on whether low or high pro-

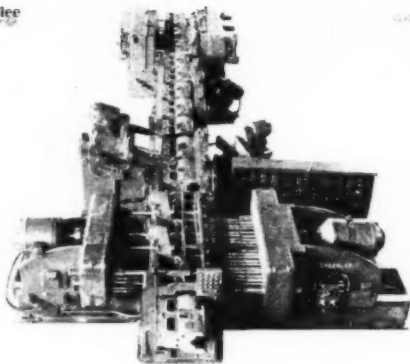
duction is required. One worker operating the three machines produces about 10 blocks an hour by running a number of cases through the first machine and accumulating them on a conveyor back of it. Then, after shutting down the first machine the cases are sent through the second, etc. The direct labor cost per case is the same with an operator on each machine for maximum production, or with one operator running the three for lower production.

Parts of the fixtures and the heads are easily removable. There is one set for each of the three different crank-

cases. The tapping units consist of three different stations with suitable heads.

The first machine performs 173 operations; the second 115; and the third, 168. In any man's shop this is a lot of work for three operators. In addition to the operators, one man's full time was employed checking, setting, replacing tools. An electrician devoted approximately one-third of his time to the machines, powered by 24 motors with a total of 135 HP.

Greenlee

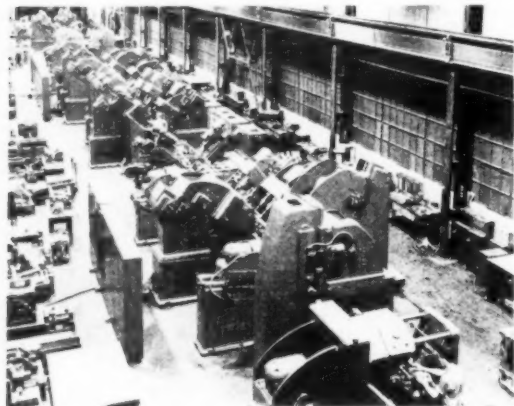


284 Operations on Cylinder Heads

Below is a transfer machine built for airplane engine cylinder heads and used to perform 284 operations on each head. This line consists of three units with a total length of 209 feet; 82 motors totaling $353\frac{1}{4}$ hp powering the units. $16\frac{1}{4}$ miles of wire connect 1373 push buttons, lights, relays, timers, and contactors.

The electric controls and interlocks on a transfer machine are no more complicated than a single station machine that transfers the work into the fixture, locates, clamps, completes the work cycle, unclamps, and returns the work. Basically, the controls are identical, only more of them. On transfer machines they are connected in series.

There are four circuits in this machine. The first controls a solenoid operated hydraulic valve for the transfer bar cylinder. At the completion of the transfer movement, the second circuit is energized. It controls a hydraulic valve admitting oil to each of the work positioning and clamping cylinders. These operate a limit switch when the work is located and clamped. The last station clamped closes the last switch in the series. This com-



pletes the third circuit controlling the feed of each of the tool carrying units.

As each unit reaches the in-end of its stroke, it closes a switch completing a series circuit. At the return-end of the stroke it closes another switch; the last one completing a circuit which

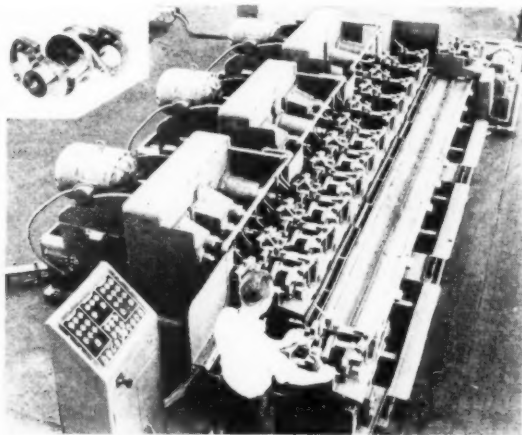
operates the clamping cylinder valve and starts the unclamping motion. As each fixture unclamps, it closes a switch, the last one completing the fourth circuit to a locator light which shows the machine is clear and ready for the next operation.

Five Holes Drilled in Counterbalance Lugs

Illustrated is a machine for trepanning, drilling, reaming and counterboring five holes in each of the counterbalance lugs in an airplane engine crankshaft. See illustration in the up-

per left-hand corner. Work is located and clamped in a work-holding fixture which transfers through the machine, conveys away from the machine and returns by the chain driven conveyor at the right. The operator either turns the fixture and work 180°, presenting the other end of the crankshaft to the tools or unloads it with a new crankshaft.

No chip conveyor was provided. The chips are allowed to drop into cutting compound tanks under the fixture rails and later are raked out at the right hand side of the machine. A total of 19 tools are used including one trepanning tool for the large diameter hole, which cut out a slug rather than make chips of all the metal removed.



188 Compressor Bodies per Hour

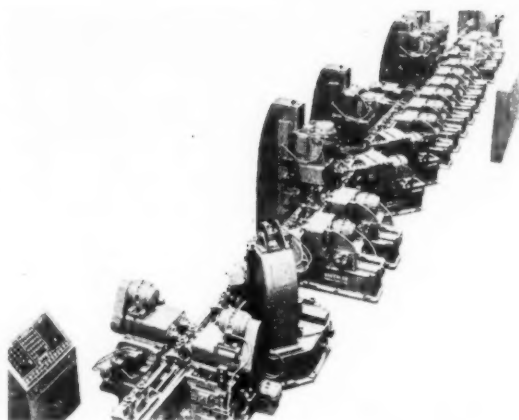
The transfer machine, on the next page, is arranged for drilling, milling, counterboring, facing, boring, and tapping holes in refrigerator compressor bodies. It differs from other machines in that two pieces of work are clamped to each transferring fixture and worked on simultaneously at each work station. By working on two compressor bodies in each station, production of 188 pieces per hour at 80% efficiency is obtained.

The total cost of the machine is less

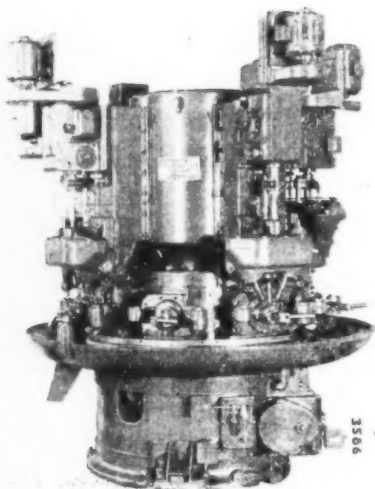
than two lines working on single castings at each station. Each of the units carries two sets of tools which require only the addition of a second set of spindles and double work-holding fixtures over a single-position transfer machine. The machine frames, slides, heads and drives are the same in either case.

There is plenty of room between each of the working stations for easy accessibility to tools, removing work, or making repairs. Its control circuit in-

cludes means for controlling any of the individual functions of the total cycle, such as: operating the transfer bar, clamping and unclamping or, connecting the individual push button control for each of the units for individual operation to aid in tool setting. The control cabinet includes lights for indicating the kind and location of trouble. A chain-type chip conveyor runs full length of the line and discharges chips to a container.



Vertical Indexing Machine



At the left is a vertical indexing machine with an automatic indexing table and five individual mechanical units for performing drilling and tapping operations. This machine is unusual because the work supporting fixtures rotate to present different surfaces to the drill and tap spindles as the table indexes from station to station.

The electrical hookup is more complicated than that in the horizontal machine because each of the five individual units must be interlocked with the table index mechanism to prevent starting the operational cycle unless the table has properly indexed. Another interlock must be provided to prevent the table from indexing unless all of the heads have completed their cycles and returned to the stop position.

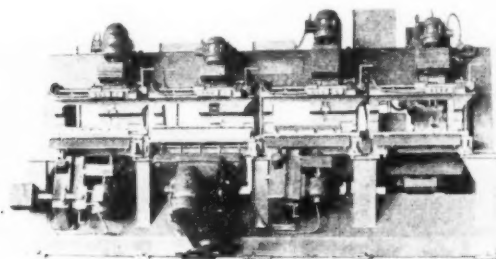
Interlocking is necessary to make certain that each head goes through its cycle, otherwise, tool breakage results when tapping follows a drilling operation. If the drill fails to operate no

hole exists for the tap to enter; a wreck would occur. The table may be indexed by selector switches independently of the units, which may be hand controlled for set-ups.

Drilling Angular Holes in Crankcases

Below is the first machine delivered . . . 1934. It was produced for drilling angular holes in an automotive crankcase. The operator transfers the work from station to station, locates and clamps it in each station and trips the

feed of each of the four units after loading. He returns to the opposite end of the machine and starts the next cycle. It is no more efficient than four individual machines, but requires less floor space. 32 tools are in operation.



The controls on this machine are very simple, consisting of start and stop push button stations for each of the motors. They are interlocked so that any two of the motors driving heads which operate at the same time have to be running before their feed can be started.

Comparison between Transfer Equipment and Individual Lines

In an automotive plant the crankcase for one model is machined on a line of transfer equipment and another crankcase, for a different model, on a production line composed of individual machines; on the latter workers operate one or two machines. The individual line had a total of 377 tools, 24 operators, 2 tool setters, and one quarter of an electrician's time to maintain the line in operating condition. Production before the war was 40 per hour. Now, with the same number of men it is difficult to produce 30 per hour.

The transfer line had 428 tools, 14% more than the individual machines,

required 12 operators, 3 tool setters, and half of an electrician's time. Pre-war production with the same manpower was 52 per hour. Present production is a bare 45 per hour. Why this discrepancy in output? Part of the difference in each case is due to an inability to obtain the proper kind of iron for castings; the rest is due to the inefficiency and lack of interest of the workers. It is interesting to note that the drop in production is in the ratio of 52:45 per hour, or 87%, for the transfer machines and from 40:30 per hour, or 75%, on the individual machine line. The more automatic a production line can be made, the easier it is to maintain high efficiency.

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A.S.M. PREPARES FOR NATIONAL METAL EXPOSITION OCTOBER 18-24

Slightly more than 90% of the 240,000 square feet of available floor space in Chicago's International Amphitheatre have been reserved for the coming National Metal Exposition, October 18th to 24th, 1947.

According to W.H. Eisenman, managing director of the Exposition and secretary of the American Society for Metals, 277 industrial exhibitors have been assigned space in the industry's largest annual exposition. Because of the unprecedented demand for exhibit space in 1947, the entire available area probably will be quickly reserved.

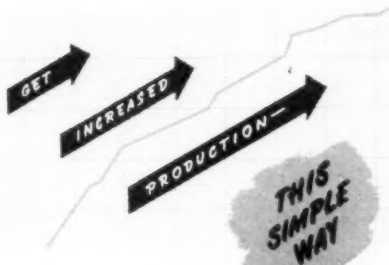
The October Metal Show will mark the first time that the national event has been held longer than 5 days. Former expositions have opened on Monday and closed on Friday night. The 1947 event, however, will be opened on Saturday October 18th, and continue until the following Friday night. Thus, two additional days have been added to the Show schedule. Because Chicago is a

major center of the metal industries, attendance "by invitation only" on the first two days of the event will doubtless draw large numbers of interested engineers and technical personnel from the Chicago area. Since annual technical sessions of four major technological societies will open on Monday, October 20th, the Exposition is expecting most of the out-of-Chicago-area visitors to attend during the week of the technical sessions.

The National Metals Exposition, sponsored by the American Society for Metals, will be held concurrently with the National Metals Congress. Technical meetings during the week will also be held by the American Industrial Radium and X-Ray Society, the American Welding Society, the Iron and Steel Division and the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers.

The Publications Committee of the American Society for Metals met in Cleveland on July 25th to select the technical papers to be presented before the Society's annual meeting.

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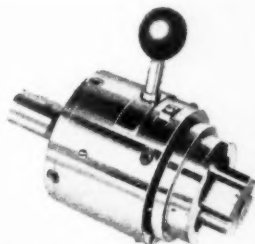
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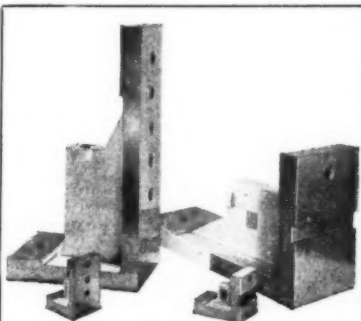
INSTANT READINGS WITH NEW GAGE

The Nilco Dial Snap Gage is announced by the Nilsson Gage Co., Inc., Dept. BB, Poughkeepsie, N. Y. The framework of the Nilco Dial Snap Gage is machined from rolled magnesium, with angles at 45 degrees to provide rigidity, and to minimize the dimensional changes caused by variations in temperature fluctuations.

The Gage features a vernier type adjusting stud, which permits $\frac{1}{4}$ " adjustments to be made in the gaging pin or movable anvil. The adjustment can be locked, with the gaging pin still remaining free for checking.

It is this type of construction that makes the Nilco widely different from conventional type dial snap gages, in that it makes possible the use of a solid upper anvil block, which insures perfect parallelism at any setting throughout the entire range of the gage. With the Nilco Dial Snap Gage a correct reading is given as soon as the gage is applied, without the need of the "rocking-back-and-forth".

The gage incorporates the use of a cam actuated rotatable plunger, equipped with needle point bearings, to transmit the travel from gaging pin to indicator.



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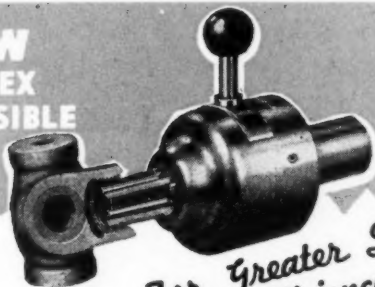
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PROTECT THAT METAL!

By Ernest W. Fair

Corrosion is a deadly enemy of every piece of metal in the plant. Paint offers protection, if it is the right kind of paint and is properly applied. Following are a number of helpful suggestions for fighting corrosion of metal whether on building construction or plant equipment.

The surface must be clean, free of dirt, oil, old paint and similar foreign objects.

A metal base paint with lead and zinc oxides, chromates and carbonates and iron oxides make good metal surface coverage and have corrosion resisting qualities. Such paints give protection and are attractive.

Two coats are desirable—a primer coat to inhibit corrosion and a second coat to prevent cracking of the primer coat. The second coat should be waterproof and durable, as well as harmonious in color to make the plant workers' job easier, reduce eye strain, increase production performance, and eliminate accidents through better dissemination of light.

Corrosion prevention is at its greatest peak in the use of paints containing red lead and zinc oxide. This has been proved in many laboratory tests and actual experience operations.

Metallic paints do not have long life so it is advisable to use paints which have a good spread per gallon and conserve in the use of the paint itself. Lead and zinc base paints stand weathering longer than the straight lead base paints so their use is advisable on all exteriors. This should be considered particularly when applying finish coats over the protective coats of surfaces.

Brush coverage is as fast as spray gun use on small areas and in most machine shop painting operations over metal surfaces is just as economical.

Spray guns cover flat surfaces better and can be used more efficiently when large areas are to be covered. Often a more complete coverage can be obtained with a gun than with a brush. But paint guns are for experienced painters; one should make certain of a full understanding of their use and characteristics before attempting that first job with a spray gun.

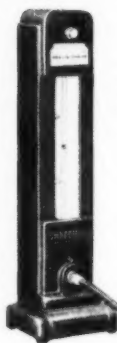
Frequent inspections for spots or scraped areas which may appear will preserve the life of the paint job.

The surface should be washed frequently.

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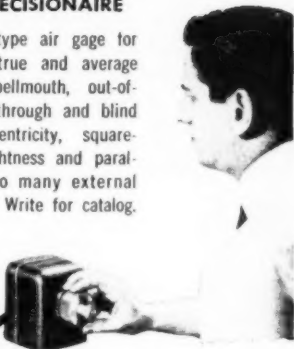
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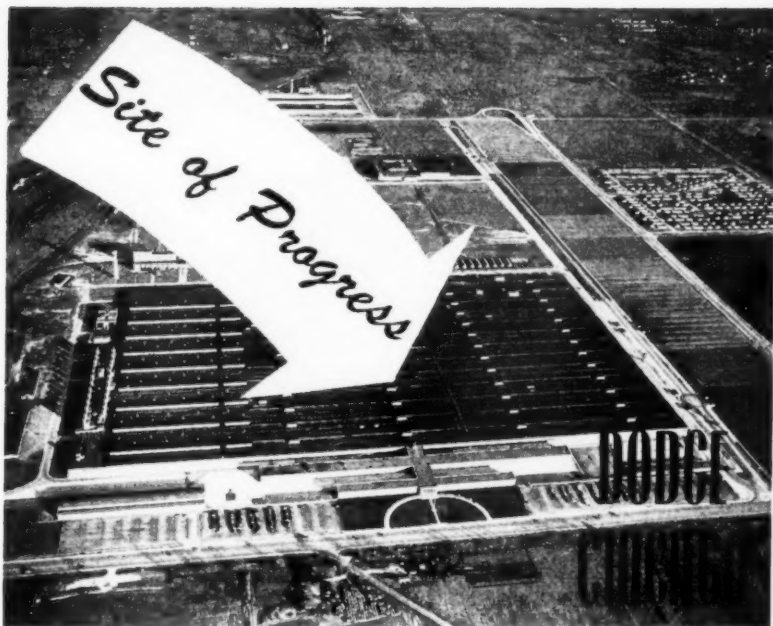
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Unquestionably, the Machine Tool Show in September will be one of the most important industrial exhibits ever to be held in America. Not because it promises to be the biggest industrial spectacle devoted to one basic industry, but because here will be demonstrated the methods and tools needed to lighten the burden of production difficulties of an anxious nation and guide it straight on the highway to continued prosperity and high employment.

Industrial leaders of not only the metal-working industry, but textile, paper, wood, rubber and other manufacturing industries long ago concluded the substitution of top-notch, modern tools for obsolete or war-battered tools to be a formidable hedge against decreasing production and spiraling prices. Prices can be flattened, high wage scales offset and continuing profits assured with new tools and improved

Revolutionary Machine tools to highlight National Machine Tool Show at Dodge-Chicago, September 17-26.

techniques. The theme of the Machine Tool Show hits the nail on the head, "More Goods For More People at Lower Costs."

During the war years the emphasis was entirely on quantity production, which meant that new machine tool models, for the most part, were frozen. New developments and techniques were evolved, however, and this show will offer the first opportunity to display the latest advances made in the art of removing metal.

The Show will be held in the Dodge-Chicago plant, the only factory building in the world large enough to hold an

exhibit of such magnitude, from September 17 to 26, inclusive. More than 1,000 machine tools and related equipment and appliances will be shown in actual operation.

Exhibits will cover more than 500,000 square feet of space in the building, which now is being used by the Tucker Corporation. The Show, the fourth to be presented by the National Machine Tool Builders' Association, will be more than double the size of the last show held in Cleveland in 1935. An attendance of 100,000 is anticipated.

The housing of the exhibits in the Dodge-Chicago plant is of itself of importance because the building is an industrial plant and not an exhibit hall. The plant has floors capable of supporting the heaviest loads required, ample power, and all the facilities for the operation of machine tools under working conditions.

According to the Association, there are some 220 types of machine tools made in the United States, with additional variations and sizes of each type, and combinations of various types, especially along the line of special-purpose machines designed for mass-production techniques. When to these are added forging machines, various other sorts of metalworking equipment, appliances and accessories, it is evident that the show will be "the world's greatest machine shop."

INTERESTING TECHNICAL SESSIONS

Concurrently with the show will be held the Machine Tool Congress, with nightly sessions at which papers and discussions will touch upon the latest developments in the metalworking industry.

K. H. Hobbie, President of the Chicago Technical Societies Council, is president of the Machine Tool Congress. Nine important associations will participate in arranging the program of speakers at the meetings, which will be open to registered visitors at the Machine Tool Show.

Included are American Bolt, Nut and Rivet Manufacturers' Association; American Foundrymen's Association; American Machine Tool Distributors' Association; American Society of Mechanical Engineers; American Society of Tool Engineers; Chi-

cago Technical Societies Council; National Electrical Manufacturers' Association; Society of Automotive Engineers and the National Machine Tool Builders' Association.

Charles F. Kettering, Research Consultant for General Motors Corporation, Industrialist James F. Lincoln, and News Commentator Fulton Lewis, Jr., are among the 13 widely-recognized speakers who will address sessions of the machine Tool Congress, to be held concurrently with the 1947 Machine Tool Show in Chicago, September 17th to 26th, it was announced.

DINNER OF WELCOME FOR OVERSEAS VISITORS

Brooks Emeny, President of the Foreign Policy Association and consultant to the United States Department of State since 1943, will be the guest speaker at the Overseas Dinner of the National Machine Tool Builders' Association on Tuesday evening, September 23, in the ballroom of the Palmer House in Chicago.

Charles J. Stilwell, President of the Warner and Swasey Company, will be toastmaster. The dinner is to be given in honor of visitors from overseas, representing every industrial nation on earth, who will be in Chicago to attend the 1947 Machine Tool Show at the Dodge-Chicago plant near the Chicago airport, September 17 through 26.

Dr. Emeny, as President of the Cleveland Council on Foreign Affairs, presided at the "Report from the World" which was co-sponsored by TIME the Weekly Newsmagazine, in Cleveland last January.

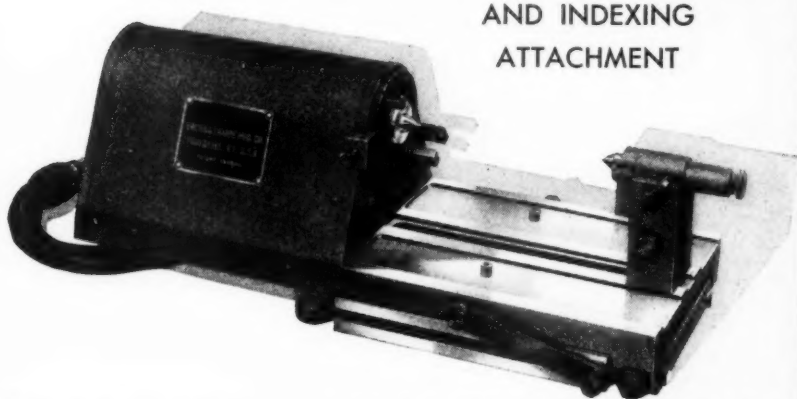
Lecturer on International Relations at Yale; American delegate to the Tokyo Conference, Institute of Pacific Relations in 1935; foreign political advisor to the late Wendell Willkie in 1940, and an author of standard works on world politics, Dr. Emeny is an outstanding figure in the continuing study of world conditions.

The subject of his address will be "The Tools of Reconstruction".

Large attendance of executives in the metalworking field from all parts of the world, particularly Europe and South America, is already assured the Machine Tool Show by the heavy advance registration from overseas.

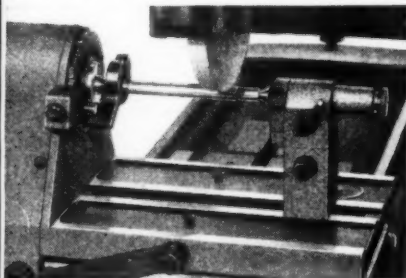
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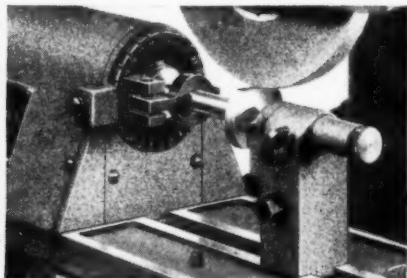


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Chicago, Sept. 17th to 26th in conjunction with
1947 Machine Tool Show

WEDNESDAY EVENING, SEPTEMBER 17th

American Machine Tool Distributors' Association

Hotel La Salle.....Ballroom.....Dinner 7:00 p.m.....Meeting 8:15 p.m.

Presiding:

MR. GEORGE HABICHT, JR.
President of the Association and
President, Marshall & Huschart Machinery Co.

Presentation of Certificates of Honorary Memberships to:

Mr. William F. McCarthy
Mr. J. Roy Porter
Mr. J. W. Wright
Mr. John Sauer, Jr.

Opening Remarks:

MR. K. H. HOBBIE
President of the Machine Tool Congress and
Vice President, Driver-Harris Co., Chicago, Ill.
MR. HERBERT H. PEASE
President, National Machine Tool Builders' Association, and
President, New Britain Machine Company, New Britain, Connecticut

DEMOCRACY WITH A GUN IN HER RIBS

MR. FULTON LEWIS, JR.
News Commentator
Washington, D. C.

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When used with the Dearborn Degree Indexing Fixture it can quickly be set to index any number of degrees from 30° to 90° at one indexing and then knock out, or it can be set to index from no degrees to 90° and then not knock out.

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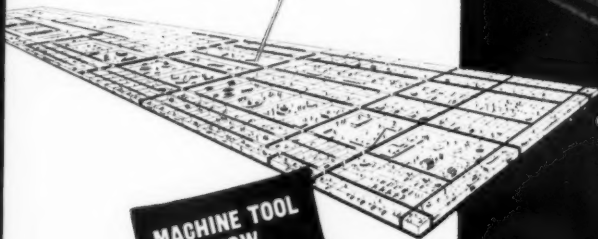


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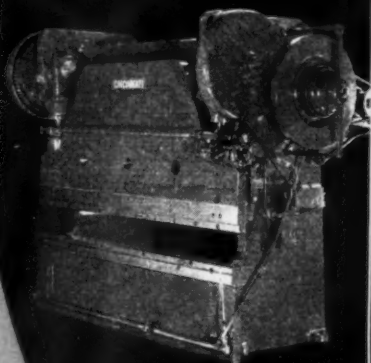
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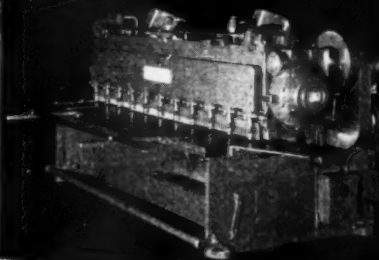
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THURSDAY EVENING, SEPTEMBER 18th
American Society of Mechanical Engineers
Production Engineering and Machine Design Divisions

Continental Hotel.....Tropical Room.....Dinner 6:30 p.m.
Gothic Room.....Meeting 8:00 p.m.

Presiding:

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 Manager Headquarters Manufacturing Department
 Westinghouse Electric Corporation
 Pittsburgh, Pa.

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MR. EDGAR D. VANCIL
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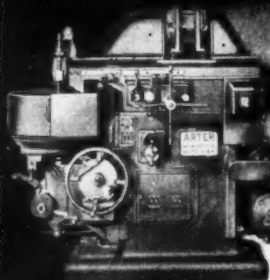
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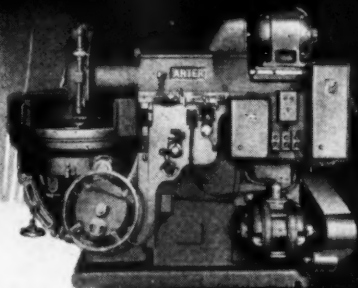
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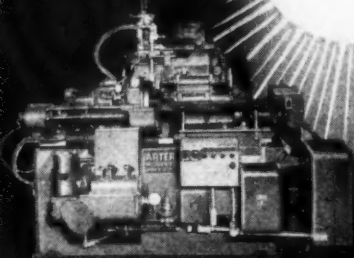
ARTER ... AT THE SHOW



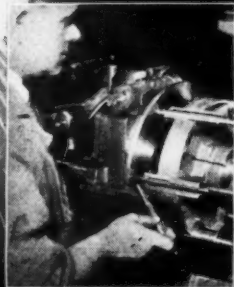
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Rotary Surface Grinder Completely
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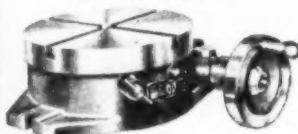
No. 135 Automatic Cylindrical Grinder



See these Modern Machines—Booth No. 31 at Chicago

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7 SIZES—10 MODELS
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FRIDAY EVENING, SEPTEMBER 19th

Joint Session

American Society of Tool Engineers

American Foundrymen's Association

Hotel Sherman.....Old Town Room.....Dinner 6:30 p.m. (3.00 per plate)

Meeting 8:00 p.m.

Presiding:

MR. F. J. SCHMIDT
Director of Sales
D. A. Stuart Oil Co. Ltd.
Chicago, Illinois

TURNING POINTS IN THE METALWORKING INDUSTRY

MR. MYRON S. CURTIS
Assistant Director of Engineering
Warner & Swasey Company
Cleveland, Ohio

WHEN AND HOW TO USE CAST IRON

MR. T. E. Egan
Chief Metallurgist, Cooper-Bessemer Corp.
Grove City, Pa. and
Past Chairman, Gray Iron Division
American Foundrymen's Association

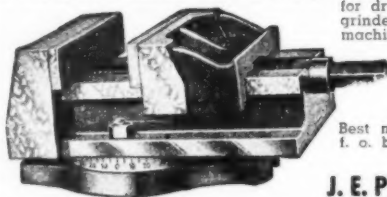
MONDAY EVENING, SEPTEMBER 22nd

National Electrical Manufacturers Association

Motor and Generator, Industrial Control, Building Wire and Cable, Rubber Sheathed Cord and Cable, and Knife and Enclosed Switch Sections

Palmer HouseBallroom..... 8:30 p.m.

PLUNKET IMPROVED VISES



We make a complete line of modern vises for drill presses, shapers, milling machines and grinders. Illustration shows our standard milling machine vise as regularly furnished and stocked.

In ordering this vise give size of slot in table:

No. 10—6" jaws, 1 1/2" deep, opens 5".....\$45.60

wt. 45 lbs.

No. 20—10" jaws, 2 1/4" deep, opens 8 1/2".....\$62.40

wt. 120 lbs.

Best material and workmanship. Prices are net f. o. b. Chicago. Dealers' inquiries are solicited.

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LIKE most other shop foremen, Pop is a "stickler" for accuracy. That goes for the tools his men use as well as for the work they turn out.

Precision filing calls for precision files — X.F. Swiss Pattern Files made by Nicholson. More exacting measurements . . . smaller points . . . longer tapers — these are features that distinguish Swiss Pattern Files from American Pattern. More careful de-

sign, accurate cut, and uniform hardness are characteristics which have made "X.F." the largest selling file brand of its type.

Nicholson X.F. Swiss Pattern Files come in more than a hundred shapes — a multitude of sizes — with cuts ranging from No. 00, the coarsest, to No. 6, the finest. Sold through industrial distributors under guarantee of *Twelve perfect files in every dozen.*

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NICHOLSON FILES *FOR EVERY PURPOSE*

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Presiding:

MR. R. STAFFORD EDWARDS
President of the Association, and
President, Edwards & Company

Speaker:

MR. C. F. KETTERING
Research Consultant
General Motors Corporation
Detroit, Michigan

TUESDAY EVENING, SEPTEMBER 23rd
Chicago Technical Societies Council

Electric Association Dinner 6:30 p.m. (\$2.50)
38th floor, Civic Opera Bldg. Meeting 8:00 p.m.

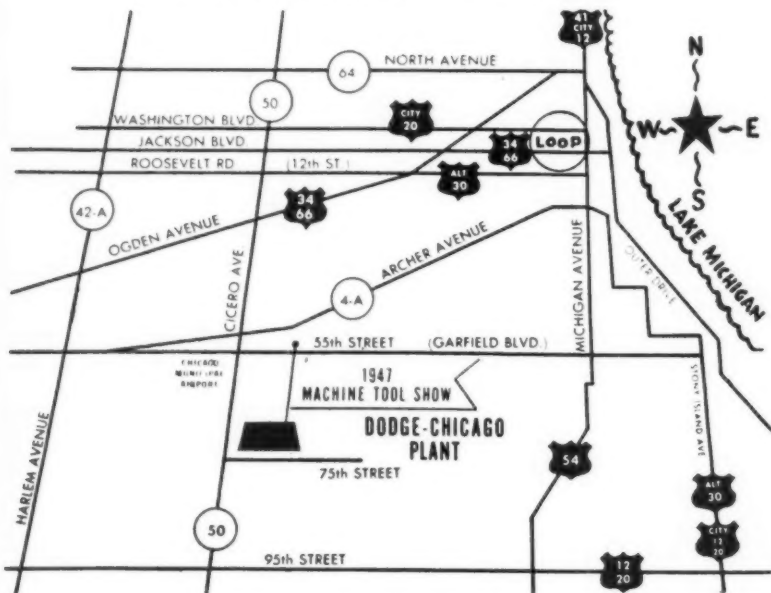
Presiding:

DR. GUSTAV EGLOFF
President of the Council, and
Director of Research
Universal Oil Products Co.

A Message of Welcome

MR. KENNETH H. HOBBIE
President of the Machine Tool Congress
Past President of the Council, and
Vice President, Driver-Harris Co.
MACHINE TOOLS AND THE PHILOSOPHY OF PRODUCTION

How to get to the Machine Tool Show from the Loop.



MR. GEORGE HABICHT, JR.
President, Marshall & Huschart Machinery Co. and
President, American Machine Tool Distributors' Association.
President, American Machine Tool Distributors' Association.

WEDNESDAY EVENING, SEPTEMBER 24th
American Society of Mechanical Engineers
Production Engineering Division, and

Special Research Committee on Metal Cutting Data and Bibliography

Continental Hotel.....Tropical Room.....Dinner 6:30 p.m. (\$5.00 per plate)
.....Boulevard Room.....Meeting 8:00 p.m.

Presiding:

MR. C. H. SIMMONS
Yarnell Waring Co.
Chicago, Illinois

REESE No. 3 24 TON CAPACITY Inclinable Power Punch Press

Extra Strong Crank-
shaft

Quick Relinable Brake

Spring Action

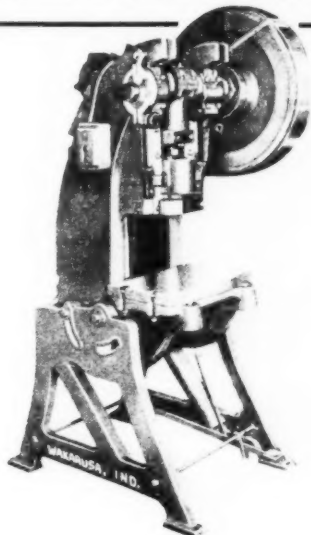
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Large Husky Legs

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Foot Ease Pedal Action

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WAKARUSA INDIANA

The GLADWIN Indicator

COLLET ATTACHMENT
REMOVABLE. REVOLVES

REMOVABLE SPRING CLIP
MOUNTS SCREW, THUMB
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BAR



CENTRALLY HAS 6" SWEEP FRICTION JOINT. ASK YOUR HARDWARE DEALER TO ORDER FOR YOU OR SEND DIRECT TO US. NO POSTAGE CHARGE ON ADVANCE PAYT. YOU PAY C.O.D.

Scale half size approx.

FULL VISIBILITY. 2 SCALES. 0.20" RANGE. 2 RED POINTERS.

Price \$7.00 with 1/4" contact point. With 1/2" point chrome plated \$7.50. Extra 1/2" point and lever assembly \$1.25. Extra 1/4" point and lever assembly \$1.55. May be used interchangeably in one indicator.

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Cincinnati Milling Machine Co.,
Cincinnati, Ohio

RECENT DEVELOPMENTS IN CARBIDE APPLICATION

MR. J. R. LONGWELL and
MR. FRED W. LUCHT
Carboloy Company
Detroit, Michigan

THURSDAY EVENING, SEPTEMBER 25th
Society of Automotive Engineers

Knickerbocker Hotel Ballroom 7:30 p.m.

Toastmaster:

MR. STEPHEN JOHNSON, JR.
SAE Vice President for Production Activity, and
Assistant Sales Manager, Bendix Westinghouse
Automotive Airbrake Company
Elyria, Ohio

Coffee Speaker:

MR. C. E. FRUDDEN
SAE President, and
Consulting Engineer
Allis Chalmers Manufacturing Co.
Milwaukee, Wisconsin

A TRIP THROUGH THE MACHINE TOOL SHOW

MR. JOSEPH GESCHELIN
Detroit Editor, "Automotive Industries"
Detroit, Michigan.

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Let us have your inquiries.

BLOOMFIELD TOOL CORP.
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BURR KEYSEATERS

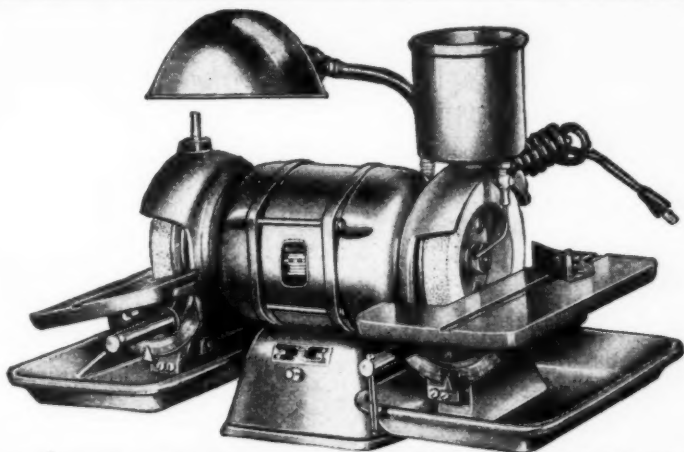


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Made in 4 sizes, for hand or motor operation.

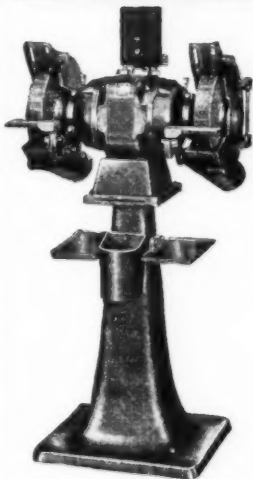
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429 Kent Ave., Brooklyn, N. Y.



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SPECIAL CARBIDE TOOL GRINDER

BALDOR GRINDER, series 500, (shown above) is the newest development in grinders designed and fully equipped for sharpening Carbide Tools quickly and accurately;

has sturdy $\frac{1}{2}$ H.P., reversible, ball-bearing motor. 6" Silicon Carbide wheels; adjustable tool-rest tables, water pot. Complete as illustrated and **GUARANTEED 2 YEARS** against burn-out.

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At left is **BALDOR Pedestal Type Grinder, 12" series,** designed for continuous heavy duty service. Available with 2 H.P. or 3 H.P. (Poly-phase) Motor, 1725 R.P.M., 12" x 2" wheels. Manually operated starter, large cast-iron flanges, cast-iron exhaust type guards, adjustable tool rests. Net weight with wheels 425 lbs.

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September, 1947

CHICAGO, SEPTEMBER 17-26, 1947

Right side of the Machine Tool Show.

Porter & Johnston 4.3	Hardinge 4.5	Mathison 46	410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 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With a hardness that gives them up to one hundred times the wearing qualities of high speed tool steel, their seemingly high purchase price is, in fact, proportionately low.

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And here is an additional saving that makes their long-run cost comparatively insignificant: *Nicholson CC Burs can be resharpened and resharpened*—so long as a workable circumference remains. Nicholson offers you this resharpening service at very reasonable cost and with precision standards fully as high as maintained in the original manufacture.

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Precision

• GROOVING
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PRODUCTION OR SHORT RUNS

These highly efficient and accurate recessing tools will fit your drill presses, boring mills, turret lathes, automatics or milling machines. They are rugged, dependable and will pay for themselves in time saved. Accuracy to within .001 inch.



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Light in color

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These new series are designed to meet every need: the 100 Series for non-ferrous machining . . . the 200 Series, fortified with active sulphur and film-strength additive, for heavier duty machining . . . the 300 Series, sulphurized, high in saponifiable content but not chlorinated, assuring bright, untarnished surfaces . . . and last but not least, a brand-new 400 Series: light-colored clear oils mildly but effectively treated, and offering an excellent money value. This 400 Series meets a demand for lower-cost high-quality transparent cutting fluids for automatics and high production jobs where feeds are light and speeds high.

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The new "**SILVER STREAK**" will be shown for the first time at the Machine Tool Show in Chicago, September 17. See it at Booth 447-C.

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MOUNTED WHEELS, the largest assortment available

- GRINDING WHEELS •
- HANDLES, Tool of 1001 Uses
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The new HANDLES "44"

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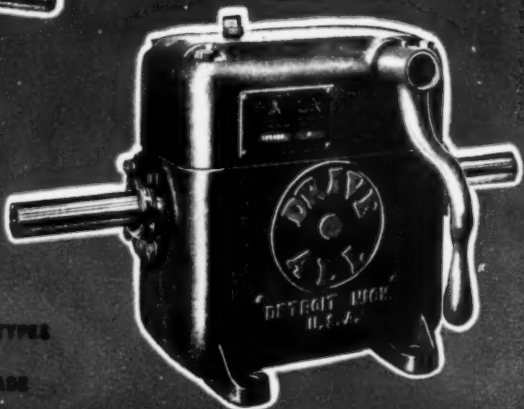
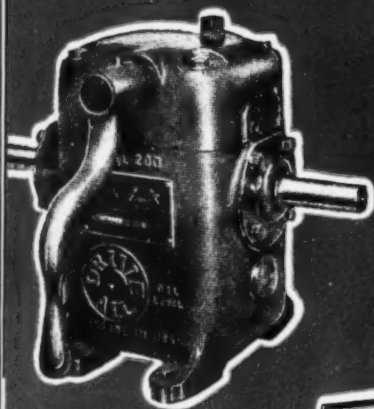
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TRANSMISSIONS**

LIST OF EXHIBITORS AT THE MACHINE TOOL SHOW

This list is correct as of July 21, 1947 and represents approximately 99% of the companies exhibiting.

Booth No.	Exhibitor's Name	Booth No.	Exhibitor's Name
		57	The American Tool Works Company Pearl and Eggleston Avenues Cincinnati 2, Ohio
126	Abrasive Machine Tool Company Dexter Road East Providence 14, Rhode Island	328 I	Ampco Metal Inc. 1745 South 38 Street Milwaukee 4, Wisconsin
571	Acme Equipment Company, Inc. 126-128 Clinton Street Chicago 6, Illinois	679	Anchor Coupling Company Libertyville, Illinois
646	Acme Industrial Company 200-214 N. Laflin Street Chicago 7, Illinois	317 I	Anderson Bros. Manufacturing Co. 1907 Kishwaukee Street Rockford, Illinois
673	Ahlberg Bearing Company 3025 W. 47th Street Chicago 32, Illinois	54B	F. E. Anderson Oil Company 1907 Kishwaukee Street Rockford, Illinois
33E	Aircraft-Marine Products Inc. 1523 N. Fourth St. Harrisburg, Pennsylvania	243	Anker-Holth Mfg. Company 2723 Connors Street Port Huron, Michigan
640	The Ajax Manufacturing Company 1441 Chardon Road Cleveland 17, Ohio	624	The Apex Tool & Cutter Co., Inc. 235 Canal Street Shelton, Connecticut
645	Allegheny Ludlum Steel Corp. 532 Oliver Building Pittsburgh 22, Pennsylvania	550	Armstrong-Blum Manufacturing Co. 5700-5800 W. Bloomingdale Ave. Chicago 39, Illinois
237	Allen-Bradley Company 136 W. Greenfield Ave. Milwaukee 4, Wisconsin	406	Armstrong Bros. Tool Co. 317-357 N. Francisco Ave. Chicago 12, Illinois
143	The Louis Allis Company 427 E. Stewart St. Milwaukee 7, Wisconsin	602	The Arrow-Hart & Hegeman Elec. Co. Hartford Connecticut
22	American Broach & Machine Co. Div. of Sundstrand Machine Tool Co. Ann Arbor, Michigan	31	Arter Grinding Machine Co. 15 Sagamore Road Worcester 5, Massachusetts
47B	American Machine and Foundry Co. 5502 Second Ave. Brooklyn 20, New York	52	Automatic Transportation Co. 101 West 87th Street Chicago 20, Illinois
1A	American Machine Tool Distributors' Association 505 Arch Street Philadelphia 6, Pennsylvania		

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- 467 **The Avey Drilling Machine Co.**
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Cincinnati 1, Ohio
- 232 **Axelson Manufacturing Co.**
P.O. Box 98, Vernon Station
Los Angeles 11, California
- 639 **Baker Brothers, Inc.**
Station F, P.O. Box 101
Toledo 10, Ohio
- 328 F **Balcrank, Incorporated**
Cincinnati 9
Ohio
- 523 **Barber-Colman Company**
Rockford
Illinois
- 49 **Bardons & Oliver, Inc.**
1133 West 9th Street
Cleveland 13, Ohio
- 129 **W. F. & John Barnes Company**
301 South Water Street
Rockford, Illinois
- 42 **Barnes Drill Company**
814-830 Chestnut Street
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- 155 **Barrett-Cravens Company**
3255 West 30th Street
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- 38 **Baush Machine Tool Company**
156 Wason Avenue
Springfield 7, Massachusetts
- 33BB **Bear Mfg. Company**
Rock Island, Illinois
- 275 **Charles H. Besly and Company**
118-124 North Clinton Street
Chicago 6, Illinois
- 37 B **Bijur Lubricating Corp.**
43-01 Twenty Second Street
Long Island City 1, New York
- 40 A **Black Drill Company**
1400 E. 222nd Street
Cleveland 17, Ohio
- 226 **The Blanchard Machine Company**
64 State Street
Cambridge 39, Massachusetts
- 633 **The Bodine Corporation**
317 Mountain Grove Street
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- 611 **The Boye & Emmes Machine Tool Co.**
125 Caldwell Drive
Hartwell, Cincinnati 15, Ohio
- 142 **The Bramson Publishing Company**
2842 W. Grand Blvd.
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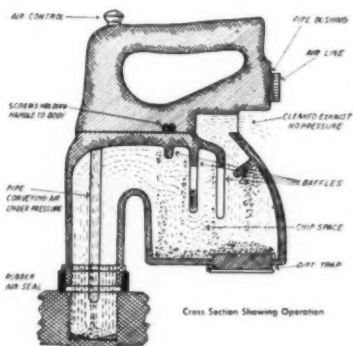
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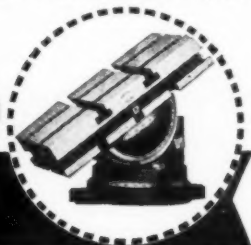
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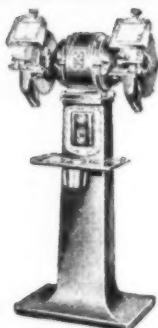
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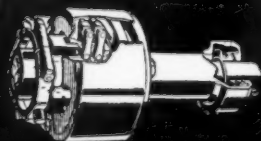
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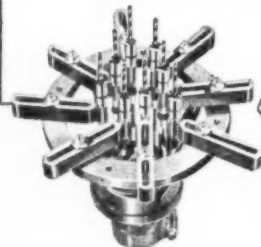
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Adjustable **MULTI-DRILL** for Production Drilling

9" DRILLING AREA—AVAILABLE WITH 2 TO 8 SPINDLES

- Designed for accurate, high speed production drilling
- RUGGED CONSTRUCTION
- Quick, easy adjustments to **any** hole pattern on or within a 9" circle; $\frac{1}{2}$ " minimum center distances, Drill sizes $\frac{1}{8}$ " to $\frac{1}{2}$ "
- Special adaptations available

MULTI-DRILLS are made in other sizes and models.
Write for details and name of your nearest Distributor



Locator arms are
designed for fast,
easy adjustment.



1967
MACHINE
TOOL
SHOW
Booth 328E

Model 900

FITS ANY DRILL PRESS

Dependable Performance . . . proven by industry

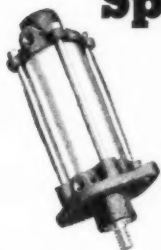
COMMANDER MFG. CO.

4227 W. Kinzie Street

Chicago 24, Illinois



Speeds Up Paper Cutting!



NOPAK MODEL D AIR CYLINDER

— is designed for vertical downward pushing power. Rod extension is through the mounting base. May be mounted on any horizontal flat base in which an opening can be provided.

REPRESENTATIVES IN
PRINCIPAL CITIES

A NOPAK Model "D" Air Cylinder, used to operate the "hold-down" mechanism of this paper cutting machine, has increased its capacity substantially. Now, a quick flip of the NOPAK valve lever clamps and releases the stacks of paper, instantly, before and after cutting.

Slow, hand-manipulation of the screw clamp is eliminated — many more cuts-per-hour are made possible. Similar application and control of Air Power . . . with NOPAK Cylinders and Valves . . . can step-up productivity of your machines too.

GALLAND-HENNING MFG. CO., 2754 S. 31st ST., Milwaukee 7, Wis.

NOPAK

VALVES AND CYLINDERS

DESIGNED for AIR and HYDRAULIC SERVICE

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

213

317L **D. A. Stuart Oil Company, Ltd.**
2727 South Troy Street
Chicago 23, Illinois

20 **Sundstrand Machine Tool Company**
and

21 **Hydraulic Division**
2531 Eleventh Street
Rockford, Illinois

644 **Sun Oil Company**
1608 Walnut Street
Philadelphia 3, Pennsylvania

676 **Super Tool Company**
21650 Hoover Road
Detroit 13, Michigan

34B **Synthane Corporation**
Oaks, Pennsylvania

601 **The Taft-Peirce Mfg. Company**
Woonsocket, Rhode Island

623 **The Taylor & Fenn Company**
54 Arch Street
Hartford 1, Connecticut

13C **The Texas Company**
135 East 42nd Street
New York 17, New York

33DD **Thomas Hoist Company**
20 So. Hoyne Ave.
Chicago 12, Illinois

114 **The Thompson Grinder Company**
Springfield, Ohio

317D **The Timken Roller Bearing Co.**
1835 Dueber Ave., S. W.
Canton 6, Ohio

35I **"The Tool Engineer"**
1922 W. Canfield
Detroit 8, Michigan

453 **Twin Disc Clutch Company**
1328 Racine Street
Racine, Wisconsin

157 **The Cuno Engineering Corporation**
Meriden, Connecticut

444 **Threadwell Tap & Die Div.**
Sheffield Corp.
Springfield Street
Dayton 1, Ohio

CERWECO STEEL APRON BRAKE

NOW AVAILABLE IN
4, 6 AND 8 FT. 14 GA.



EASE AND SIMPLICITY
HAND OPERATED
ENGINEERED AND BRACED
TO DO THE JOB RIGHT
FULLY GUARANTEED
QUICK DELIVERIES
WRITE FOR CIRCULAR

**WM. C. JOHNSON & SONS
MACHINERY CO.**

1211 Hadley St.

St. Louis 6, Mo.



"Production"
Type S
— CENTERLESS —
SURFACER
POLISHER
BUFFER

Cut production costs with this versatile machine which combines a centerless feed polishing machine with a vertical or horizontal belt surfacer, polisher or buffer.

Ideal for cylindrical polishing or straight line finishing on flat work.

Outstanding features—Quick Change from vertical to horizontal—Adjustable Gauge for bevels—Tracking Device for quickly tracking belt and Automatic Take-Up for stretch of belt.

Write today for information.

PRODUCTION MACHINE CO.
GREENFIELD, MASS.

SUPER ACCURACY

in Simple Form for your Fine Tolerances



STANDARD

Micronar Dial Indicator

**A Definite Advance
in PRECISION**



Fine
Adjustment
Screw
Facilitates
Setting

Exceptionally Consistent REPEATABILITY

Improved design gives uniformly better performance than has yet been possible with high amplification indicators. Amplifies measurements more than 1500 times, with outstanding consistency.

HIGH ACCURACY

Equivalent in accuracy to that of much more costly instruments. Ideal for checking gages, inspection, high precision production, or for universal comparator applications.

NO FLUTTER OF HAND

The light-weight hand is instantly responsive and snaps to reading position positively, without fluttering.

SHOCKPROOF CONSTRUCTION

Protects vital parts from damage in case of sudden impact on contact point.



Sapphire Tipped
Contact Point
Guards Against Wear

Side view showing standard AGD Lug Type Back; interchangeable with conventional type indicators.

ENGLISH MODEL No. 47

Graduated .00002"
Range .0018"

METRIC MODEL No. 86

Graduated .001 m/m
Range .04 m/m

STANDARD GAGE CO., INC., Poughkeepsie, N.Y.

- 125 **Union Manufacturing Company**
New Britain, Connecticut
- 236 **U. S. Tool Company, Inc.**
255 North 18th Street
Ampere, East Orange, New Jersey
- 619 **Universal Boring Machine Co.**
312 Main Street
Hudson, Massachusetts
- 150 **The V & O Press Company**
Division of Rockwell Mfg. Co.
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- 9 **Van Norman Company**
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Springfield 7, Massachusetts
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- 317J **Vascoloy-Ramet Corp.**
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- 402 **Veeder-Root, Inc.**
Hartford
Connecticut
- 228 **Vickers Incorporated**
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Detroit 32, Michigan
- 224 **Vinco Corporation**
8855 Schaefer Highway
Detroit 27, Michigan
- 154 **Wallace Supplies Mfg. Company**
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Chicago 14, Illinois
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Cleveland 3, Ohio
- 328A **Warner Electric Brake Mfg. Co.**
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Beloit, Wisconsin
- 483 **Weddell Tools, Inc.**
37 Centennial Street
Rochester 11, New York
- 451 **Westinghouse Electric Corp.**
511 Wood St., P. O. Box 868
Pittsburgh 30, Pennsylvania
- 32 **Wiedemann Machine Company**
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Philadelphia, Pennsylvania
- 452 **Wilson Mechanical Instrument Co.**
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New York 17, New York
- 35J **Wilton Tool Mfg. Company**
936 Wrightwood Avenue
Chicago 14, Illinois
- 121 **Yale & Towne Mfg. Company**
4530 Tacony St.
Philadelphia 24, Pennsylvania

Carbide Tools by RAYMAC

SOLID CARBIDE cutting tools remove hardened stock with ease and accuracy. For hand-ground precision tools to lick that tough production problem—Specify Raymac.

MIDGET AND STANDARD SIZES

RAYMAC MFG. COMPANY
Incorporated
3729 Cass Detroit 1, Mich.

GAGES AT ½ PRICE

NEW Vard thread gages to 1½" . . . plug, ring, snap. Our complete stock at 50% off list. Specials at price of standards. Write for latest stock list.

PAUL B. SLATER CO.
1025 Santa Fe Ave. Los Angeles 21, Calif.

Big NEWS for you at



IN CHICAGO AT THE DODGE-CHICAGO PLANT

To earn profits in the face of high labor and material costs, Industry must turn to Accuracy as never before. At the Machine Tool Show, manufacturers will see Accuracy at work — especially at A.H.Q. (*Accuracy Headquarters) — the P&W Booth, that is. There'll be big news — accuracy news — news you won't miss... for the 6,000 sq. ft. P&W Booth will be one of the biggest at the Show. Here are just a few hints of the news for you at A.H.Q. . . .

Booth No. 55 in the northeast corner

PRATT & WHITNEY

Division Niles-Bement-Pond Company

WEST HARTFORD 1, CONNECTICUT

Accuracy  Headquarters

1 Precision Machine Tools. Jig Boreers, Lathes, Vertical Shapers, Thread Millers, Surface Grinders, Gear Grinders... for effective precision manufacturing and toolroom production... they'll all be working at A.H.Q.

2 Die Sinking and Mold Exhibit. The newest P&W Die Sinkers and Keller Tracer-Controlled Machines in action on a full range of work from small cavities up to large automotive dies.

3 Kellerflex Flexible Shaft Machines. Including the full range of attachments and accessories... plus a "try it yourself" demonstration of the amazing cutting ability of the new Keller Carbide Burs.

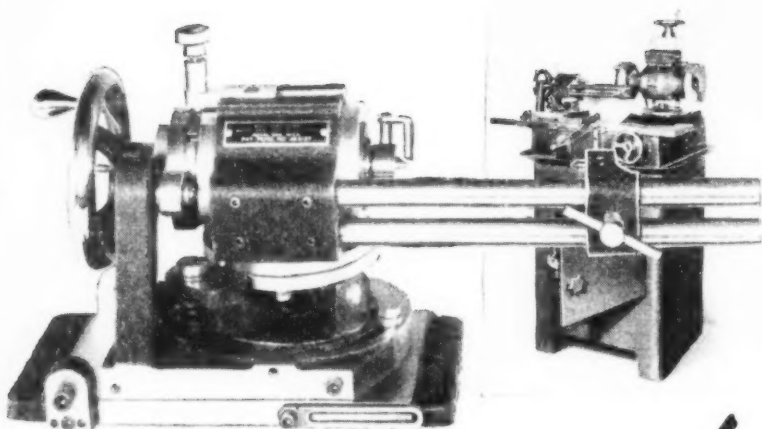
4 Small Tools. You'll see a complete showing of P&W taps, dies, reamers and milling cutters at A.H.Q., plus some interesting carbide tool developments.

5 Precision Gaging Equipment. Everyone knows the basic accuracy of the many P&W Conventional Type Gages... of P&W's ElectroLimit and Air-O-Limit Comparators. The gage news at A.H.Q. will be new ways to engineer them into gaging systems for quality control and selective assembly.

6 New Literature. Fully descriptive Pratt & Whitney literature will be available at A.H.Q. But you won't need to lug it. Just register for the pieces you want, and it will be sent to you, promptly.

7 The Experts Will Be There. You'll meet the men who engineer accuracy into P&W machines, tools and gages... at A.H.Q. They'll be on hand to help you on the solution of your problems. Come early and often to see them... you'll find a comfortable chair and a warm welcome at A.H.Q.





See for Yourself at the Show!

BOOTH 34-C

The New

D-S GRINDER

Makes It

Easy To Radially Relieve Cutting Tools

Radially relieved cutting tools have been one of those "luxuries" that production men have been able to enjoy only on highly special, long run jobs.

D-S has changed this picture. Today any reasonably good grinder hand can grind almost any form you can dress in the wheel—do it so quickly, easily and skillfully that you can afford to radially relieve even standard tools and special tools for short runs!

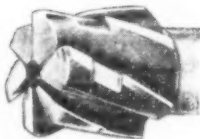
See for Yourself

D-S GRINDER DIVISION

ROYAL OAK TOOL AND MACHINE CO.

621 East Fourth Street • Royal Oak, Mich.

Step
Drills
•
Taps
•
Reamers
•
Counter
Bores
•
Profile
Mills
•
Center
Drills
•
Gear
Tooth
Rounding
Cutters
•
Etc.



WRITE FOR OUR CATALOG

SOME OF THE MACHINES TO BE DISPLAYED AT THE SHOW

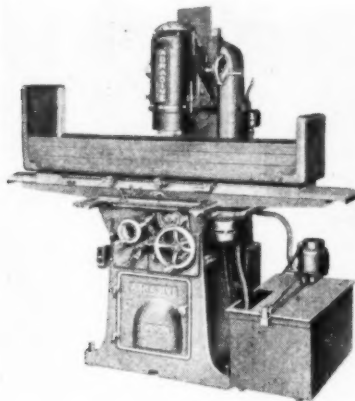
This is only a partial listing of machines and accessories to be demonstrated at the show. In all instances only one machine is illustrated, which does not mean that it is the most important machine to be presented by the company, nor that it is

the only machine on display. The editors of the MACHINE and TOOL BLUE BOOK have tried to list as well as possible all the products on which information was received by presstime.

**ABRASIVE MACHINE TOOL CO.
EAST PROVIDENCE 14, R. I.**

BOOTH NO. 126

Vertical Spindle Surface Grinder



This unit, type No. M-34, is a departure from previous models. The manufacturer has developed a Vertical Spindle type of Surface Grinder, providing increased power at the cutting point, minimizing vibration, and eliminating belting troubles. The grinding wheel, provided as standard equipment, is the segment type, mounted in a 6" diameter segment wheel chuck, effective both in removing stock and in securing a high grade finish.

Also to be shown:

**Horizontal Spindle Surface Grinders
Graduating Machines
Micro-Finishing Machines**

**AHLBERG BEARING CO.
CHICAGO 32, ILL.**

BOOTH NO. 673

Bearing Display



The principle of the Ahlberg Bearing display is that the internal self-aligning ball bearings mounted in pillow blocks can "naturally" compensate for misalignment of spring or whipping shafts without injury to bearings or lubricant seals. In the display itself, a steel shaft bent to a purposely exaggerated degree is mounted between two pillow blocks, and rotated by a motor. As the misaligned shaft revolves, the self-aligning bearing adjusts itself automatically within the housing to compensate for the bend, at the same time providing true bearing action in all positions.

Also to be shown:

Tapered and Cylindrical Roller Bearings

**ALLEGHENY LUDLUM STEEL CORP.
PITTSBURGH, PENNA.**

BOOTH NO. 645

Tool Steel and Carbides

Tool Steels and Carbides will highlight the display of this manufacturer. Plans are under way for a conference space where

customers can actually watch the designing of carbide die sections by this firm's tool designers, and discuss with them the properties of the various Allegheny metals. In addition, stainless and electrical steels will be displayed. The company's library of technical literature will be available to customers.

**AMPCO METAL, INC.
MILWAUKEE 4, WIS.**

BOOTH NO. 328-I

Castings of Ampco Metal



Ampco Metal is an alloy of the aluminum-bronze class, a high iron, aluminum, and copper alloy characterized by strength, controlled hardness, corrosive resistance, and excellent bearing properties. It resists

shock, impact, and pressure. It has outstanding wear resistance, is non-magnetic, non-sparking, and stands up well under severe operating conditions. Produced by centrifugal or sand casting, extruding and forging, it is unvarying in physical properties and chemical constituents.

Also to be shown:

**Extruded bronze rods and tubes
Resistance welding and arc welding
electrodes**

**THE AVEY DRILLING MACHINE CO.
CINCINNATI 1, OHIO**

BOOTH NO. 467

Avey Belted Motor Drill

The belted motor Avey sensitive drill has been redesigned and is regarded as an exceptionally versatile unit. This machine incorporates a single speed motor, foot mounted; it is easily replaceable with six-speed geared transmission and a v-belt drive to spindle. With its wide range of speeds, this drill now accomplishes a great variety of operations.

Also to be shown:

**No. 2 MA-6 Drilling and Tapping Machine
Avey Cam Feed Units
Aveydraulic Torquematic Deep Hole
Drilling Units**

**THE LOUIS ALLIS CO.
MILWAUKEE 7, WIS.**

BOOTH NO. 143

Adjusto-Spede

Pushbutton controlled. Two individual machines, a conventional squirrel cage induction motor and an eddy current clutch have been combined to form a simple single driving unit. Larger machines incorporate separately mounted and coupled motor and clutch. Electronic excitation cabinet and the speed control station are included as part of the equipment.

Also to be shown:

**Rolled Shell squirrel cage motors
Flanged mounted motors**



**Rapid Reversing Motor
Standard squirrel cage motors**

THE AMERICAN TOOL WORKS
COMPANY
CINCINNATI 2, OHIO

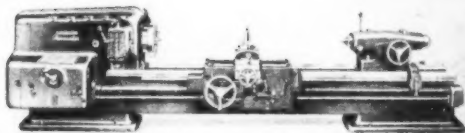
BOOTH NO. 57

25" American Pacemaker Lathe

This lathe, the latest of the Pacemaker

series, is equipped with abundant power, stamina, and carefully selected speed ranges for using cemented carbide cutting tools to the limit of their capacities. Three types of heads are provided, 27 speed and 18 speed for constant speed motor drive, and 9 speed for 2 to 1 adjustable speed

D.C. motor drive. The conventional multiple disc starting clutch and brake unit has been abandoned and replaced with an electrical finger-tip control, providing push button start, stop, and brake from the apron, and a jog button on the head to facilitate speed changing.



Also to be shown:

16" American Hydraulic
Shaft - Duplicating
Lathe

18" Pacemaker Lathe

75" Hole Wizard Radial
Drill



REVOLVING TIP LATHE CENTER



\$6²⁵

No. 2 Morse Taper
Shank.

No. 3—\$7.75

No. 4—\$9.75 Morse
Taper



Lowest Priced
"Live" Center
On The
Market

- Runs cool and yields under load to compensate for work expansion
- Same dimensions as standard solid centers
- No more messy lubrication of work centers

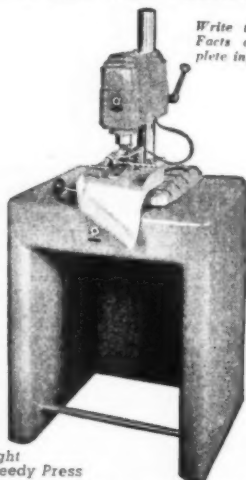
- No more damaged center holes in work
- Accurate quality construction throughout
- Saves time — saves money — saves work

ASK YOUR DEALER FOR DETAILS

ERNEST H. VANDERWALL CO.

440 Golden Gate Ave.
San Francisco 2, California

THE AMAZING NEW AUTOMATIC
"AUTOMARK" MACHINE
 IS FAST AND VERSATILE



A Light
Speedy Press

Write today for
Facts and com-
plete information

- ... For Assembly of Small Parts on production lines
- ... For Riveting and Staking Operations
- ... For Small Broaching Jobs
- ... For Marking Products and Various Parts

Operates pneumatically from your shop Air Line—with manual or automatic control — Regulated strokes, uniform pressure, s-p-e-e-d-y action, and easy and fast adaptability to all light marking and pressing jobs have made AUTOMARK an important production line machine.

Step up
your
Production



Consult
our
Engineers

**DEFIANCE MACHINE
and TOOL CO., INC.**

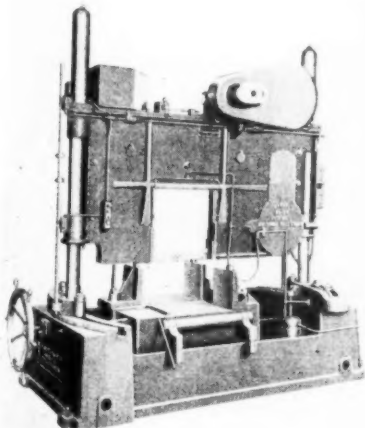
1920-24 S. Vandeventer, Dept. BB
 St. Louis 10, Mo.

ARMSTRONG-BLUM MFG. CO.
 CHICAGO 39, ILL.

BOOTH NO. 550

**Marvel Hydraulic Band Sawing Machine
 (No. 15)**

"Will employ high speed steel endless band saw blade, 1½" wide, .072" thick, with widely spaced teeth. This machine



cuts off solid steel bars up to 15" x 15" solids, employs hydraulic direct drive, feed, work-clamping and end-gauge retraction, and will be shown equipped with an automatic bar feed. A torque-control valve adjusts the feed pressure to hold a constant pulling load on the blade as work is being cut off.

*Illustrated is Hack Saw Machine, Marvel No. 24, capacity 24" x 24", weight 16,000 lbs., blade size 36" long, 4½" wide.

Also to be shown:

Reciprocating hack sawing machine
 Hydraulic "Roll-stroke" Hack Sawing Machine

ARTER GRINDING MACHINE CO.
 WORCESTER 5, MASS.

BOOTH NO. 31

No. 135 Automatic Cylindrical Grinder

This new machine tool, grinds by the straight-in or plunge-cut feed method, both

VINCENT DRESSER CUTTERS ARE

Tougher

NO BROKEN TEETH

NO MUSHING OVER

CLEANER DRESSINGS • LONGER SERVICE LIFE

Vincent Grinding Wheel Dresser Cutters are establishing new records for clean, accurate dressings—for long service.

This outstanding performance is due to the special analysis steel in Vincent Cutters and the exclusive heat treating process which is applied to them. This process was developed and is applied in the Vincent plant—one of the country's three

largest heat-treating installations. It hardens Vincent Cutters to an exact degree of "toughness" . . . not too hard, not too soft. Vincent Cutter teeth will not break, will not mush over on your toughest applications. Try them.

Complete stocks of Vincent Dressers and Cutters are carried at your mill supply house.

VINCENT

STEEL PROCESS COMPANY

Heat Treaters of Metals—300 Tons Capacity Daily

Producers of

GRINDING WHEEL DRESSERS AND CUTTERS • HSS TOOL BITS
CONICAL CUTTERS AND HOLDERS • DIAMOND DRESSING TOOLS
TUBE CLEANER CUTTERS • HIGHWAY SURFACER CUTTERS

2424 Bellevue Avenue

Detroit 7, Michigan

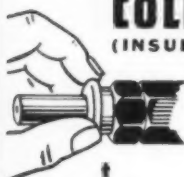
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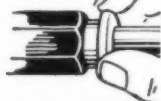
DUB LIFE

PLUG GAGES WITH COLORED PLASTIC COLLETS (INSULATING)



**RED for
"NO GO"**

**GREEN
for "GO"**



DUB LIFE

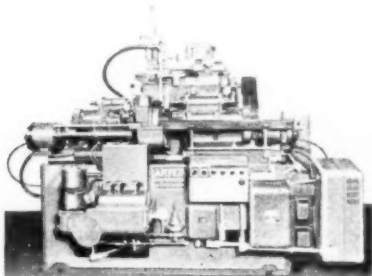
Remember! — Colored Collets instantly identify plugs. They are weight reducing, lock securely and will not mar the finest finish.

United Precision Plug Gages are scientifically designed. They are made by skilled craftsmen from the finest gage steels. The latest in modern equipment for metal working and heat treating assures a high standard of perfection—dependable accuracy, maximum service at minimum cost.

**UNITED PRECISION
PRODUCTS CO.**

SHABONNA, ILLINOIS

straight or tapered diameters such as are presented on roller bearings, valve stem guides, tappets, pistons, shafts, and similar work which can be held on centering devices. A work turret or carrier having a plurality of holes is used. The work is loaded into the turret by hand. As the turret indexes to grinding position, the two live centers automatically pick up and drive the work. Successive indexing movements bring the work to a chute onto which it is automatically discharged. All movements are synchronized and accurately timed.



The unit is provided with equipment for grinding with a coolant. The pump is direct motor driven, and vertically mounted in the 50-gallon tank, which is positioned on the floor behind the machine. The hydraulic oil tank, motor, and pumps are a complete Vickers unit, positioned on the floor at the side of the machine.

Also to be shown:

Model "B" Hydraulic Rotary Surface Grinders

Model "D" Rotary Surface Grinders

Lassy SINE BAR

Hardened & stabilized. Both sides square & parallel to work surface. Allows attaching to angle plate.

The one sure way to locate and check work fast and accurately when an angle is involved.

Price in case Lapped finish **\$28.00**

Send for circular

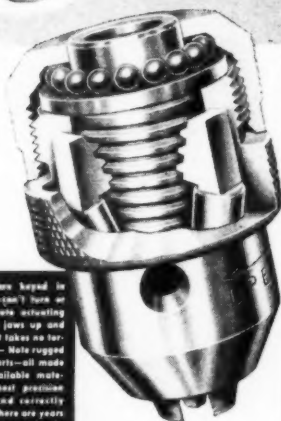
LASSY TOOL CO.
PLAINVILLE, CONN.

Available again for . . .
IMMEDIATE DELIVERY

Chuck No.	Drill Capacity	Standard Taper
1-A	0 to 1/4	No. 30
1 1/2-AB	0 to 5/16	No. 30
2-AB	0 to 3/8	No. 2
3-AB	0 to 1/2	No. 3
3 1/2-AB	5/8 to 3/4	No. 3



Ettco KEYLESS SELF-TIGHTENING DRILL CHUCKS



Main jaws are keyed in chuck body—can't turn or wobble — Note adjusting screw moves jaws up and down only—it takes no torsional strain — Note rugged size of all parts—all made of finest available materials in highest precision standards — These are years of trouble-free service in every Ettco chuck.

WE'RE happy to announce that we have caught up with the big demand for these chucks and can, once more, make prompt shipments. This will be good news to the thousands of shopmen who know from experience the big time-and-energy-saving advantages of the "keyless" feature. Drilling action does the tightening — the heavier the load, the tighter they hold. There's no drill slipping, no damaged shanks, no retightening. Yet they are easily released by hand. Because no strength is needed, Ettco chucks are particularly suited for women operators. When it comes to holding drills tight, rigid and true, Ettco chucks are unsurpassed. When it comes to quality and workmanship there are no better chucks made.

ETTCO TOOL CO.

596 Johnson Ave.

Detroit 1

Brooklyn 6, N. Y.

Chicago 6

Precision TAPPING

*Leads
changed
in 90
seconds*



M & L

PRECISION TAPPER

This is a fast rugged production tool capable of sustained accuracy. Flexible and adaptable, it cuts clean screw threads, handling up to $\frac{3}{4}$ " in non-ferrous metal and 0 to $\frac{1}{2}$ " in SAE steel. Class 3 and Class 4 gage fits and high production schedule are accomplished in normal operation even with unskilled help.

Tapping speeds are 95 to 350 rpm with reverse speed twice that of forward speed. Taps are guided by precision ground lead screws which are easily and quickly changed. Bulletin 143 gives full details.

**Dealers' inquiries
are invited**

LECKINGER
MACHINE AND EXPERIMENTAL CO.
716 N. Highland Ave., Los Angeles, Calif.



**AUTOMATIC TRANSPORTATION
COMPANY**
CHICAGO 20, ILL.
BOOTH NO. 52

Automatic Skylift Fork Truck

The Skylift has the highest lift of any fork truck designed with a standard 83" collapsed height, since it will stack to 130" from the floor to the top face its forks; it is capable of stacking to ceiling heights in low-clearance buildings or box-cars. The Skylift has independent hydraulic rams to raise each section of the telescopic lift. The forks and uprights thus move independently, the forks raising to the top of the upright before the latter begins to extend.

Also to be shown:

Tramstacker

Transtractor

AXELSON MANUFACTURING CO.
LOS ANGELES 11, CALIF.
BOOTH NO. 232

Heavy Duty Engine Lathes

These machines, designed primarily for the rapid removal of metal in turning operations, contain such features as a direct connected unimount motor, which eliminates belts, pulleys and guards; a built-in reverse disc clutch providing an equal number of forward and reverse speeds; a hydraulic disc brake requiring no operator attention.

Headstock gears are of forged alloy steel, precision machined, heat treated, hardened and ground for perfect alignment and mesh. The tailstock is a two-speed unit providing sufficient power for heavy drilling operations without the necessity of an auxiliary handwheel bar.

STANDARD PARTS



FOR
JIGS, FIXTURES,
DIES, GAGES, TOOLS
AND MACHINERY

Featuring
Hand Knobs, Quar-
ter Turn Screws,
Spherical Washers,
"C" Washers, Jig
Feet - Locating Keys
Write for Catalog No. 2
Inquiries for Test Die
and Mold Estimates
Invited.

GEORGE F. BUB AND SON
11413 MADISON AVE. CLEVELAND 2, OHIO



Great Names in America's Progress

George Westinghouse

● The name George Westinghouse is an honored name not only in industry but in many industries. First prominent through the invention of the air brake, the name and genius of Westinghouse is associated with hundreds of other products known for utility, performance and service to people everywhere. Niagara presses, shears and other machines for working sheet metal are important in the production of an infinite number of products bearing the Westinghouse name. Men responsible for production economy are invited to look into the advanced design of Niagara machines.



NIAGARA

MACHINE AND TOOL WORKS

683 Northland Ave.

Buffalo 11, N. Y.

District Offices: CLEVELAND • NEW YORK • DETROIT

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SPECIAL BEHR BORING BAR

- EXTRA SOLID
- EXTREMELY ACCURATE
- CHATTER PROOF
- TAKES BIGGER CUTS
- BETTER FINISHES



This SPECIAL BEHR BAR is designed to bore and counterbore four different parts on a large turret lathe.

STANDARD BEHR BARS are available in shanks to fit your machine. New accessories will bore to 23" diameter.

WRITE FOR FREE FOLDER

BEHR

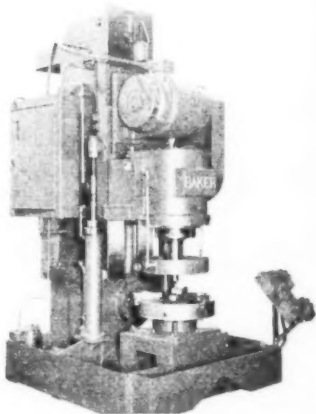
PRODUCTS
COMPANY

13732 Woodward Ave.
DETROIT 3, MICHIGAN

BAKER BROTHERS, INC.
TOLEDO 10, OHIO

BOOTH NO. 639

Model 60-HO-4 Single Spindle Drilling and Boring Machine



This unit is a vertical type, extra heavy duty machine equipped with hydraulic feed. It provides a smooth, powerful transfer of power from a 40 HP motor to a 6.299" diameter spindle through a large enveloping type worm and worm gear drive. The spindle has a 12½" dia. flanged end for attaching cutter heads direct; also is available with standard No. 6 Morse taper. Provision is made for pick-off gears in combination with sliding gear in head, giving two changes of speed.

Also to be shown:

Baker Vertical Drill Press

Baker Electronic Feed Vertical Drill

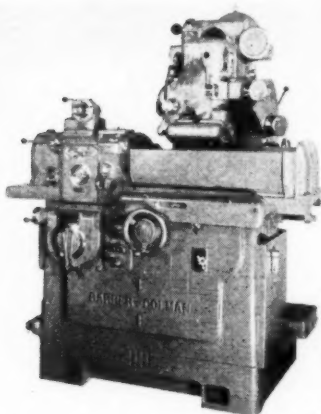
Baker Hydraulic Unit.

BARBER-COLMAN CO.
ROCKFORD, ILL.

BOOTH NO. 523

Hydraulic Hob Sharpening Machine

This automatic Hob Sharpening Machine, designated as No. 6-5 will hold adjacent spacing within "tenths" of an inch. Besides extreme accuracy, it features un-



usual rigidity in the wheel spindle, enabling the production of a micro-inch finish of from 10 to 20. The unit is designed to accommodate a wide variety of

sizes and types of work. It stresses unit construction throughout, to facilitate servicing; for example, all hydraulic lines may be serviced without removing machine elements, and the hydraulic cylinder may be removed independently of the table.

Also to be shown:

- Automatic Hob Shifter
- Automatic Hobbing Machine
- Horizontal Cycling Production Hobbing Machine
- Horizontal General Purpose Hobbing Machine
- Combination Hob and Reamer Sharpening Machine

BARDONS & OLIVER, INC.
CLEVELAND 13, OHIO

BOOTH NO. 49

Turret Lathes and Cutting Off Machines

No. 43A Hydraulic Automatic Turret Lathe is entirely new in design and principle and will be unveiled at the show. Other machines on exhibit will be Geared

**RED—
NO GO**

**GREEN—
GO**

Pat. Pending



ACCEPTED!

**THREAD
RING GAGES**

No wonder more and more industries are adopting this gage as standard. Its revolutionary design assures wear life 5 to 7 times longer. And maintains accurate inspection. Just try the Woodworth Thread Ring Gage on your extra tough job—and you, too, will standardize!

Wire or write for folder No. 46R at no obligation.

**5-PLUS
FEATURES**

- 1 Greater accuracy and stability
- 2 Longer wear life
- 3 Less weight
- 4 Positive identification
- 5 Positive adjustment

**ACCURACY
YOU CAN TRUST**

WOODWORTH

N. A. WOODWORTH CO., SALES DIVISION • 1300 E. NINE MILE ROAD • DETROIT 20, MICHIGAN
COMPLETE LINE OF PRECISION GAGES • DIAPHRAGM CHUCKS • CONE-LOK JIGS

Electric Turret Lathe with remote control; Universal Turret Lathe arranged for chucking work with air chuck; High production saddle type turret lathe arranged for chucking work and Hydraelectric Cutting off Machine.

**BARNES DRILL CO.
ROCKFORD, ILL.**

BOOTH NO. 42

Drilling Machines

One new machine possesses 12 speeds selected by dial control; 9 feeds selected by dial control; improved feed engagement control; and wider range of speeds and feeds. Another recent development is a small size drilling machine, 2 h.p. capacity and equipped with air traverse for rapid approach and rapid return.

Also to be shown:

Air-cooled unit
Honing Machine
Magnetic Coolant Separator

**BARRETT-CRAVENS CO.
CHICAGO 23, ILL.**

BOOTH NO. 155

Barrett PowerOx

This electric lift truck is a recent development, designed in two capacities, 4000 or 6000 lbs. It is powered with a heavy duty electric motor, and is supplied with a large diameter, wide face front wheel, allowing the unit to be steered with full power through a 270° arc. The lifting apparatus is also electric, permitting a 4" lift in 4 seconds; a hydraulic gear pump is directly connected with the drive motor. All controls are finger-tip; one hand from one position operates the forward and reverse speeds, steering, braking, as well as raising and lowering the load.

Also to be shown:

Barrett PalletOx
Barrett TractorOx

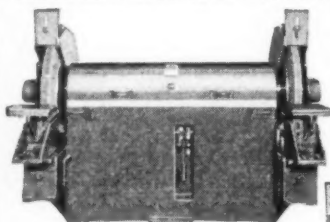
**BEAR MFG. CO.
ROCK ISLAND, ILL.**

BOOTH NO. 33BB

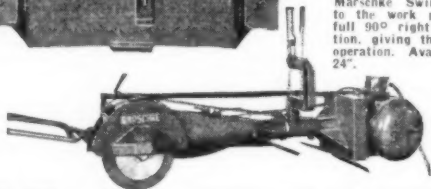
Balancing Machines

The balancing of an automatic crankshaft, a fractional horsepower armature, a hammermill rotor and a combine reel will

MARSCHKE GRINDERS & BUFFERS



The Marschke Vari-Speed Grinder, the largest and most efficient of all heavy duty floor stand grinders, combines massive ruggedness with the dependability of accurately controlled wheel speed. Constant cutting speed is maintained through a pair of variable speed shafts linked with the wheel guard adjustment so that spindle speeds are automatically changed when guards are reset to follow the wheel wear. The Marschke Multi-Speed Floor Stand is the same machine but equipped with a pair of 3-step pulleys, giving a choice of three speed changes.



Marschke Swing Frame Grinders take the wheel to the work piece. The wheel is easily tilted a full 90° right or left of the normal vertical position, giving the operator more freedom for efficient operation. Available in wheel sizes of 16", 20", and 24".

Marschke Swing Frame Buffers are basically like the Swing Frame Grinders but with wheel guards and the spindle speeds required for buffing and polishing. Maneuverability, combined with weight and power, makes them most productive for fast, clean finishing.



VONNEGUT
BRUSH BACKED
SANDER HEADS



VONNEGUT
ELECTRIC
MOULDERS



MARSCHKE
GRINDERS
& BUFFERS

VONNEGUT MOULDER CORPORATION

1805 MADISON AVENUE • INDIANAPOLIS 2, INDIANA



When tomorrow is too late—when only the best will do—ask your Bunting Distributor. He has, available now, Bunting Bars of Bearing Bronze and Bunting Standard Stock Bronze Bearings—Quality Bronze in its most usable forms. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches in Principal Cities.

PRECISION BRONZE BARS

BRONZE BEARINGS

BUSHINGS

Bunting

71

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

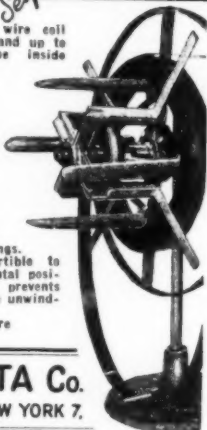
231

WESTLEN REELS

*Adjustable
Self Centering*

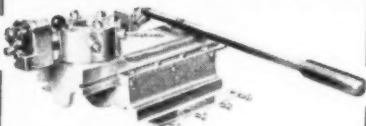
for winding flat and wire coil stock to 15" in width and up to 500 lbs. weight. The inside diameter of coil is adjustable, ranging from 11" to 20". The outside ring diameter on standard machines is 28" but larger rings may be secured if desired. Coils may be centered by a few turns of adjustment wheel, and special features eliminate tipping and backlash. Machine is equipped with brake & ball bearings. Reel is quickly convertible to either vertical or horizontal position. Adjustable spider prevents kinking or crossing while unwinding.

Send for literature



The RULETA Co.
27 WARREN ST. NEW YORK 7.

MORE PROFITS FROM YOUR LATHE



STEP UP PRODUCTION

INSTALL a Newton Precision Bed Turret for maximum tooling on your Logan, Atlas or Craftsman Lathe. This self-indexing, self-headlocking turret accommodates six tool positions. Adjustable gibs assure long-life and precision operation. Fast—Smooth—easy to operate. Get greater production now—Write for free literature Dept. MT.

Price
\$150
F.O.B.
Los Angeles

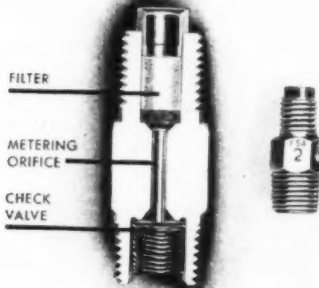
A-K TOOL COMPANY
2029 Blake Avenue Los Angeles, Calif.

be demonstrated on the four machines. Capacities range from five to 2,000 pounds. The 340-R standard, the 340-R special and two 375-R standards will be shown. A partial list of rotating parts that can be balanced on machines includes armatures, rotors, fans, flywheels, etc.

BIJUR LUBRICATING CORP.
LONG ISLAND CITY 1, N. Y.

BOOTH NO. 482

Bijur Meter-Unit



Bijur equipment, assuring positive "metered" lubrication by co-ordinated functions of lubricator pump and Meter-Units, will be on display. The principle of the Meter-Unit entails the control of oil-feed to individual outlets by the units selected. Each of these fittings is a precision assembly of three elements: 1. The Filter, giving added protection against dirt of any kind in the lubrication reaching the bearings. 2. The Metering Orifice, indicating the known flow characteristics or flow rate, stamped upon the body of the Meter-Unit. 3. The Check Valve, opening under oil-feed pressure, functions primarily to prevent reverse flow; it is provided with a flexible oil-proof facing for the valve to create a positive seal against leakage.

Also to be shown:
Bijur Lubricating Equipment
Constant Feed Gear Pump

Now!

Genuine



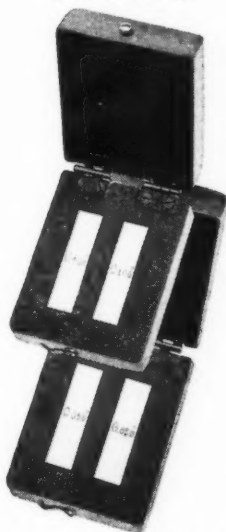
Johansson

Sintered Tungsten Carbide

GUARD BLOCKS

"A" Standard
($\pm .000004''$)

"B" Standard
($\pm .000008''$)



Protect your valuable Jo-Blocks with a pair or two of these new super-hard Johansson Guard Blocks! Simply wring them onto the ends of any Jo-Block combination and they'll fend off virtually all the impact and abrasion of any gaging job.

Practically Wear-Proof!

Made of finest Sintered Tungsten Carbide, finished to Jo-Block brilliance and accuracy. Available in "A" and "B" standards, and in thicknesses of 0.100" and 0.050", cased in pairs or complete sets of four blocks, at very moderate cost.

**PATENTED AND WARRANTED BY FORD •
TO PROTECT AND ENORMOUSLY LENGTHEN
THE SERVICE LIFE OF YOUR**



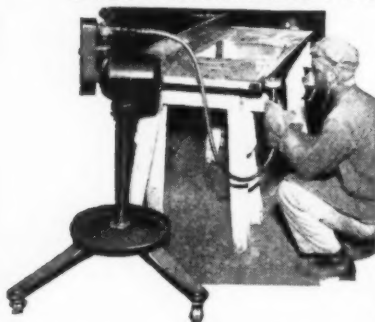
Johansson
GAGE BLOCKS



FORD MOTOR COMPANY • JOHANSSON DIVISION

3606 Schaefer Road, Dearborn, Michigan

Craftsmen of the Production Line . . .



choose *haskins*
FIRST!

■ Good tools make any job easier—make any man a better craftsman. That's why Haskins portable flexible shaft tools are so often the choice of skilled production line men. They know tools: and they know that Haskins machines will simplify all their work—buffing, grinding, polishing, drum and disc sanding.

Whether your problem is finishing die castings or fabricating with stainless steel, Haskins tools can help you get improved craftsmanship in your shop.

Write for Catalog.

R. G. Haskins Company,
2 W. Harrison Street,
Chicago, Illinois



HS-4; widely used in fabrication of all steels; 1/2 h.p. multi-speed, countershaft unit, 1500 to 7800 R.P.M., mounted bench height on caster base, 360° swivel. One of many models.



haskins
FLEXIBLE SHAFT EQUIPMENT

THE BRIDGEPORT SAFETY
EMERY WHEEL CO.
BRIDGEPORT, CONN.

BOOTH NO. 313

Automatic Hydraulic Cut-Off Machine



This machine, completely hydraulic in operation, will handle stock up to 2" in diameter, and will automatically cut off stock in lengths up to 12'. The cut-off head consists of a 16" diameter cut-off wheel which is driven by a 10 HP motor through a V-belt drive. The head is mounted on a rocker shaft with Timken bearings sealed against grit. Coolant is supplied to both sides of the wheel through and adjustable nozzle which is complete with baffle plates.

Also to be shown:

No. 103 Vertical Surface Grinder

BRYANT CHUCKING GRINDER CO.
SPRINGFIELD, VT.

BOOTH NO. 525

No. 109 Internal Grinder

Represents a new conception of a machine tool. Compact machine for high production on precision parts. New features include sealed preloaded ball bearing

See the



DEVLIEG

JIGMIL

AT THE
MACHINE TOOL BUILDERS' SHOW
DODGE CHICAGO PLANT
BOOTH No. 527

Featuring:

- ★ AUTOMATIC SPACING TO .0001" ACCURACY
- ★ **DUPLITROL** FOR REPETITIVE WORK . . .
- ★ MICROBORE CONTROL OF HOLE SIZE TO .0001"
- ★ AUTOMATIC WORK RETRACTION

A totally new approach to the problems of precision boring and milling of single pieces or quantity production without the use of jigs.

- **PROVEN—THE WORLD'S HIGHEST ACCURACY**
- **PROVEN—THE FASTEST METHOD**
- **PROVEN—TO REQUIRE LESS SKILL**
- **PROVEN—MOST EFFECTIVE IN COST REDUCTION**

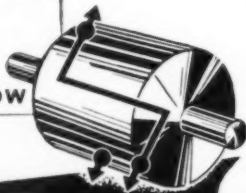
See the



MICROBORE

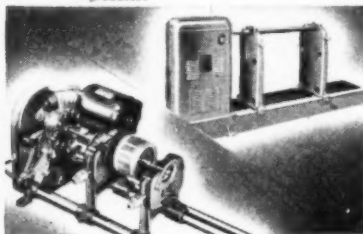
display. The sensational new tool with easy, fast adjustment, dependable to one-tenth thousandths part of an inch. In direct reading on resulting diameter. For turning, boring and limitless other uses where fast and dependable tool adjustments are needed.

DE VLIEG MACHINE COMPANY
450 Fair Ave., Ferndale 20 (Detroit), Mich.



*See Bear
DY-NAMIC BALANCING
in Action*

See for yourself how BEAR DY-NAMIC BALANCING cuts maintenance costs. See how it increases the sales-appeal of your products!



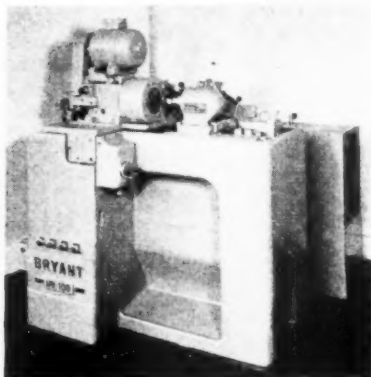
Here are TWO of the BEAR BALANCERS you'll see in operation

If you cannot make the Show and you are interested in seeing Bear Dy-Namic Balancing in Action, drop us a line. We will arrange a demonstration. BEAR MFG. CO., Dept. M-20, Rock Island, Ill.

BEAR
COMBINATION
STATIC AND DY-NAMIC BALANCING MACHINES



slides, electronic cycle controls and hi-frequency wheelhead for speeds up to 100,000 RPM. Also featured is the No. 150, largest internal grinder built by Bryant. New features include fingertip control through hydraulic pressure; 60-inch face plate; and workhead swings for angular work.



Also to be shown:

Other internal grinders
Line of precision gages

BUNTING BRASS & BRONZE CO.
TOLEDO 9, OHIO

BOOTH NO. 317 B

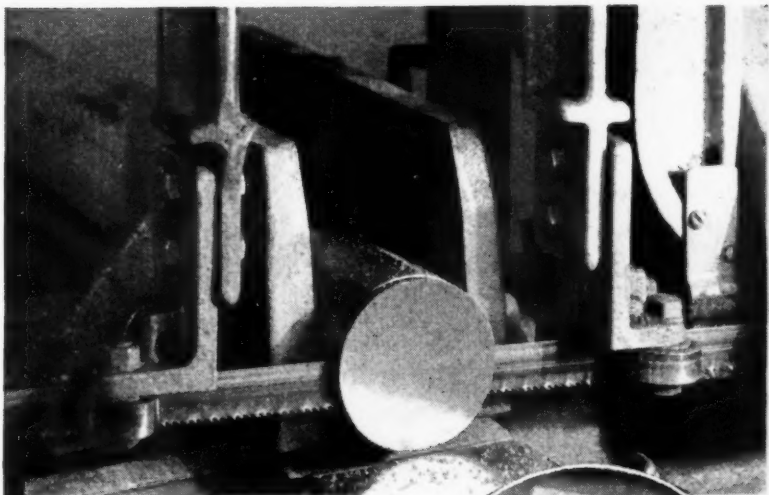
Cast bronze bearings

One exhibit will feature a sleeve bearing whose starting friction is not greater than its running friction. A properly lubricated sleeve bearing with fluid film lubrication possesses a co-efficient of running friction at least as low as that of any other bearing type. The exhibit will show how the starting friction can also be reduced to this same low value.

Also to be shown:

Demonstration of proper placing of oil groove in the load carrying area of the bearing.

Metallic ores from which bearing bronzes are made.



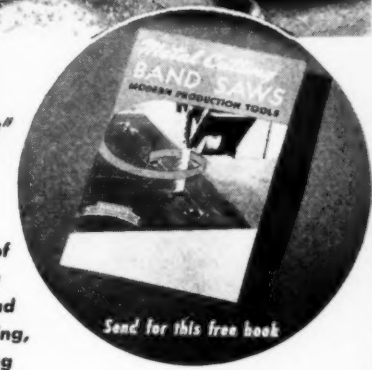
Climb on the **SIMONDS** "BAND-SAW WAGON"



**Save Thousands of
Hours by Band-Saw
Cutting . . . instead
of Shaping, Milling,
Turning, Drilling**

Getting to be a "Big Parade" . . . the way shops are swinging to metal band-sawing . . . and keeping their one-purpose machines free to do the work for which they were designed.

Simonds Metal-Cutting Band Saws can do a score of jobs, and do them all at top speed and accuracy . . . cut-off work, contour cutting, and cutting of irregular shapes like jigs, dies, fixtures, as well as heavy straight production cuts . . . and many other similar jobs.



And Simonds Metal Bands earn top profits on these jobs because they're made to *stay* on the job many hours longer . . . running smoothly, easily, cleanly. Simonds special steel, perfect tooth-milling and even tooth-set . . . those are the Simonds extras that *pay* you extra on every Simonds Metal Band you buy. Order from your distributor today.

BRANCH OFFICES: 1150 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portland 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. *Canadian Factory:* 595 St. Remi St., Montreal 30, Que.

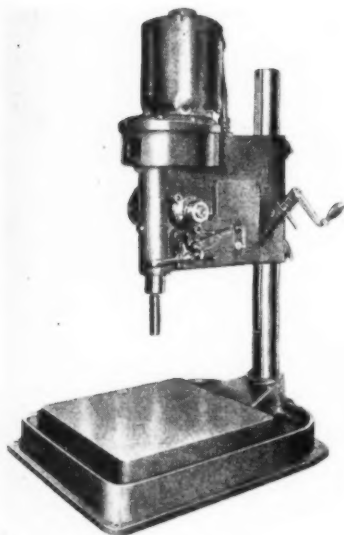


When Writing Advertisers Please Mention **MACHINE** and **TOOL BLUE BOOK**

BUHR MACHINE CO.
ANN ARBOR, MICH.

BOOTH NO. 158

Production Bench Tapper

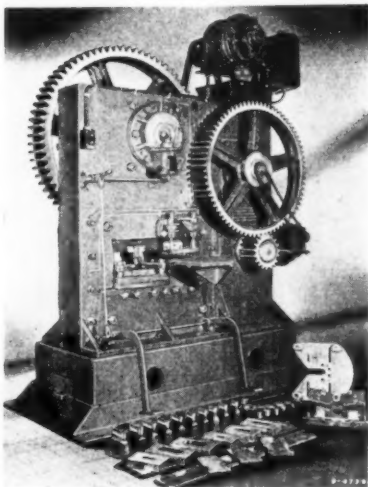


This combines compact construction with selective full automatic cycle or hand operation with a safety clutch which reduces tap breakage to a minimum. Change gears make all threads possible in tap diameters from No. 4 to 5/16" in cast iron, or 1/4" in steel, with Class 3 fits under normal conditions. The ball bearing motor is 1/3 h.p., 1800 rpm, 3 phase, 220 volt. Dimensions of the tapper are swing, spindle to column, 10 7/8" clear; spindle diameter, 1 3/8"; maximum vertical travel 2-7/16"; base 17"x22 1/2" with coolant trough. The solid 2 1/4" dia. column may be replaced with one of extra length should the standard 15 1/4" clearance under spindle be insufficient for certain requirements. Designed with ball bearings where possible, a splined spindle and shaved, spline-broached and induction hardened gears. Base and head are heavy cast iron.

BUFFALO FORGE CO.
BUFFALO 5, N. Y.

BOOTH NO. 616

No. 9 Locomotive Spring Punch and Shear



A new machine developed by Buffalo for cutting and punching locomotive and tender leaves. Capacity, cold shearing 7 x 3/4" spring leaves.

Also to be shown:

No. 10 Billet Shear
Bending Rolls
Universal Iron Worker
Floor Drills and Bench Drills
"RPMster"

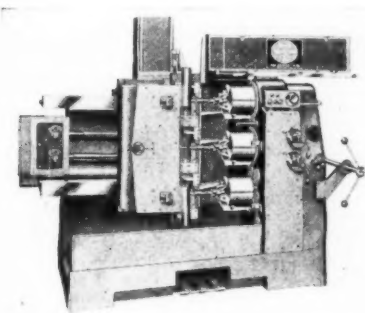
THE BULLARD CO.
BRIDGEPORT 2, CONN.

BOOTH NO. 314

Bullard Man-Au-Trol Control

Tools in the new Model 30 Man-Au-Trol Horizontal Lathes are mounted in a vertical plane on a slide in back of the vertical plane in which three spindles operate. Maximum drive up to 75 h.p. Equipped for manual and automatic operation. Sixteen

feeds from .0003 to .0156 with 40 speeds from 50 to 1,200 r.p.m. Positive feed screws. Angular or taper turning is achieved by merely combining the vertical and longitudinal feeds.



Also to be shown:

Type K Mult-Au-Matic
30x20 Spacer

CARBOLOY COMPANY, INC.
DETROIT 32, MICH.

BOOTH NO. 655

Carboly Cutting Tools

Some 500 different carbide parts which have become standard catalog items will be on display. Among the many types of carbide products will be the regular Carboly cutting tools. To these are added such items as solid carbide boring bars, many varieties of standard shapes of carbides for use in resisting wear in machinery, sheet metal dies and punches with carbide nibs and segments, wheel dressers, carbide tipped lathe centers, milling blades, scraper blanks, grinding cones, etc. Providing action in the exhibit will be a demonstration set-up of the latest carbide tool grinding techniques.

Also to be shown:

Carboly-set Ingersoll-Rand Jackbits for
Ore Mining.

involute splines

Precision-made gears . . . small and medium sizes . . . in standard and special tooth forms, from any kind of material, made to your exact specifications. Tolerances within .0005".

Beaver gears are used in well-known makes of modern products such as automobiles, radios, automatic tuning devices, phonographs, clocks, timing mechanisms, motion picture projectors, chronometers, gauges, optical equipment, instruments, machine tools, and many others.

Beaver engineers will design or redesign gears to meet performance and cost requirements. Send us your blueprints for estimate.

MEMBER OF



Beaver Gear Works Inc.

1033 PARMELE ST.

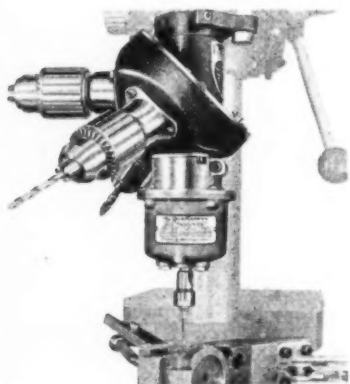
ROCKFORD, ILLINOIS

Write for latest bulletin describing Beaver Gear Facilities and Methods.

**CHICAGO DRILLET CORP.
CHICAGO 22, ILL.**

BOOTH NO. 649

Quadrill



The Quadrill is a drill press attachment which can be used for all drill press operations, when the tools for the work can be held and driven in any ordinary drill chuck. The unit will accommodate four boring or cutting tools; however, one tool only is in actual motion when the head is in operating position. The entire device is assembled to the quill of the drill press, and is driven from the drill press spindle. In operation, the turret collar is forced against the drill press housing by an upward movement of the drill press quill, compressing the collar spring, and disengaging the driver from the driven spindle.

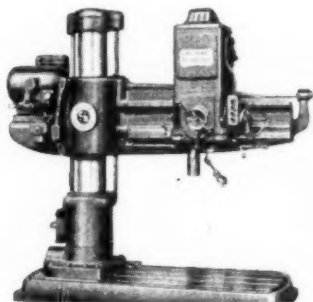
Also to be shown:

Chicago Drillet Quadtapper

**THE CINCINNATI BICKFORD TOOL CO.
OAKLEY, CINCINNATI 9, OHIO**

BOOTH NO. 514

Super Service Radial Drilling Machine



The illustration shows an entirely new simplified type of Super Service Radial Drilling Machines having an 11" diameter column hydraulic arm and column clamp. This model is equipped with 12 motor speeds and 6 feeds; all controls are centrally located at the head. Several new features have been incorporated in the design of this recent development.

Also to be shown:

**Super Service Jig Boring Machine
Portable Horizontal Drilling Machine
Super Service Precision Drilling Machine**

Cut Broaching Time in $\frac{1}{2}$

**WITH A CHICAGO
CONTACT BROACH**



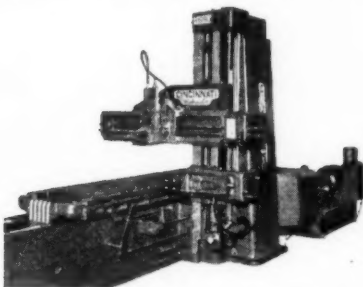
The form broach shown which was made for pipe ratchets is now made complete in one operation . . . in half or less time than previously required to mill these ratchets. Perhaps that tough machining problem can be solved by broaching. We also have facilities for complete machining of parts. Write, phone or wire today.

**CHICAGO BROACH CO.
5516 W. LAKE ST. CHICAGO, ILLINOIS**

**THE CINCINNATI PLANER CO.
CINCINNATI 9, OHIO**

BOOTH NO. 220

Cincinnati Hydraulic Openside Planer



The 30" x 8' Hypro Hydraulic Planer is a completely new machine having approximately 41 new and exclusive features for units of this type and size. It was developed for the small Planer field for use in tool rooms, maintenance departments,

small shops, and on small planer work in large production quantities.

This machine is driven by a hydraulic unit with Hypro finger tip remote control for infinite adjustment of table speeds. Features of the unit include a new type hydraulic feed mechanism, and hydraulic tool lifters.

Also to be shown:

Hypro Planer Type Milling Machine

Hypro Double Housing Planer

Hypro Vertical Boring and Turning Mill

**THE CHICAGO SCREW CO.
CHICAGO 24, ILL.**

BOOTH NO. 425

Socket Screw Products

The complete line of Socket Screw Products will be on exhibit as well as representative samples of Hexagon Head Cap Screws, Square Head Set Screws, Taper Pins, Studs, Flat and Fillister Head Cap Screws, Brass and Steel Nuts, Special Screw Machine Products, Cast Iron and Steel Valve Tappers and Screw Machine Assemblies.

CARBOLOY TIPPED SCRAPER BLADES

Especially good for hard alloy iron and extremely hard bronze castings. If you are using Anderson Hand Scrapers it is not necessary to buy complete new scrapers in order to use carboloy tipped blades. Simply remove high-speed blade and slip in the Anderson Carboloy Tipped Blade. Available in three widths.

by *Anderson*

**THEY LAST 8 TO 10
TIMES LONGER**

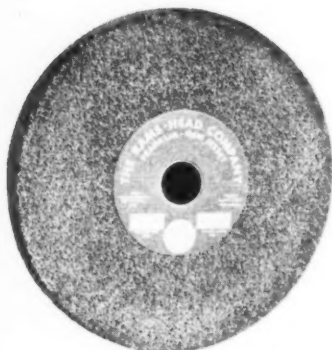


**Send for Bulletin 7-5
ANDERSON BROS. MFG. CO., ROCKFORD, ILL.**

See Our Catalog in Sweet's

Hand and Power Hydraulic Presses, Balancing Ways, Roto Checkers, Hand and Power Scrapers, Spotters.

PRECISION GRINDING



with

- (1) One wheel for both rough and finish grinding.
- (2) Longer wheel life.
- (3) Increased production.
- (4) Only two wheels needed —
**GREEN FOR GENERAL
GRINDING**
BLUE FOR FORM GRINDING

THE RAMS-HEAD CO.
Franklin, New Jersey

CINCINNATI LATHE & TOOL CO.
CINCINNATI, OHIO

BOOTH NO. 522

Contourmatic Lathe

Simplified tracing attachment has been added to the lathe which synchronizes the in and out movements of the cross slide with the longitudinal movement of the carriage to accurately duplicate the contour of the master template. Produces work of a circular cross section. Hydraulically operated clutch and brake mechanism. The master template does not rotate and may be a turned work piece or a flat template. The tracer will follow the profile of the master in either feed direction of the carriage.

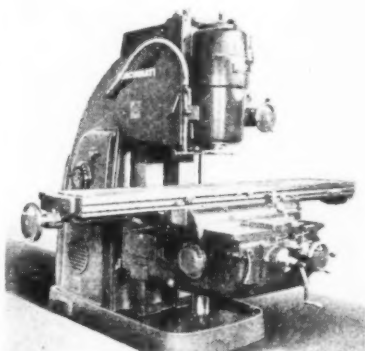
Also to be shown:

Tracermatic Cincilathe
Tray-Top Cincilathe

THE CINCINNATI MILLING MACHINE CO.
OAKLEY, CINCINNATI 9, OHIO.

BOOTH NO. 306

Cincinnati Dual Power Milling Machine
Cincinnati High Power Dial Type Milling Machine.



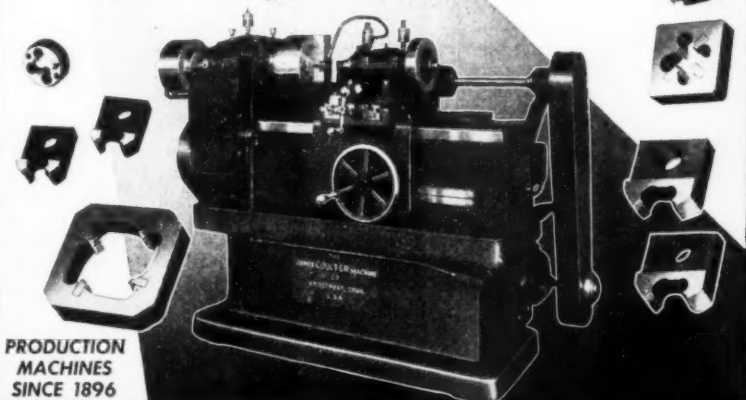
The High Power Dial Types are available in plain, universal, and vertical styles, and are driven by 25 HP motors. The Dual Power Machines are driven by 40 or 50 HP motors, and are built in plain and vertical styles only.

★ 4 BIG REASONS WHY

the Standard COULTER "HT" Thread Milling Machine
IS THE MACHINE FOR YOU!

- ★ Any number of Lands eccentric or con-eccentric relief can be produced. Dies from $\frac{3}{8}$ " up to 2"
- ★ Equipped to give cutter speeds with infinite changes from 100 RPM to 650 RPM
- ★ Can thread round, square and inserted chaser dies
- ★ The most economical of ALL threading machines

Write for Full Particulars

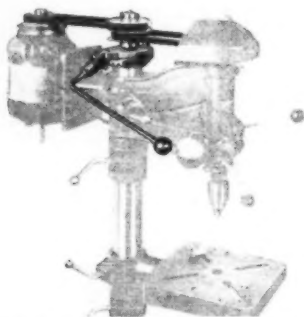


PRODUCTION
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Enables the operator to provide correct speed for large or small drills by the convenient method of shifting a lever.

Designed to fit all popular makes of drill presses. Installed in a few minutes. No drilling of holes or changing present equipment.

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ERA VARIABLE SPEED DRIVES FOR DRILL PRESSES, AS LISTED BELOW	Standard Bronze Bearing	Standard Ball Bearing
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These machines are designed for shops requiring ample power for taking heavy cuts on large work, and where both high speed steel and sintered carbide cutters are used. Square gibbed bearing ways on the column and top of the knee, a 36" wide knee to support the saddle, and a rectangular overarm with built-in vibration damper and full length taper gib clamping are features of the rugged construction.

Dual Power machines have two ratings for the horsepower available at the spindle; units wired for AC equipment have a 50 HP motor which can deliver its full capacity while the machine at any one of 18 spindle speeds from 45 to 1400 RPM. Through automatic controls within the column, 25 HP is delivered at the six low spindle speeds of 14 to 37 RPM. This arrangement enhances the machine's versatility for milling operations requiring extra low speeds.

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A flick of the thumb and you've got your external and internal dimensions. Knife-edged, hardened jaws provide exact thread measurements. A depth gage blade gives speedy depth measurements. Made of stainless steel; packed in a sturdy leatherette case. Scientifically engineered, painstakingly machined and American made, the AMIC Quick Action Caliper is a tool without a rival.

Size 6". Graduation 1/40", vernier reading .001, catalog No. 21; graduation 1/40" and full mm, vernier reading .001 and 1/10 mm, catalog No. 22. Also AMIC precision Vernier Calipers, Height Gages, Depth Gages, Pocket Calipers, Precision Graduated Metal Scales.

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Your small metal parts can be produced on a DCMT Die Casting Machine — quickly and economically. Manufacturers now using DCMT Machines have eliminated up to 35 machining operations on a single casting — at the same time increasing production 500 per cent. You too can enjoy similar competitive advantages.

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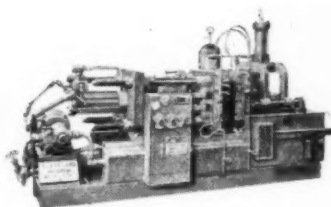


The only vise that can be set by dials to simplify the making of difficult compound angles.

This is possible when each axle has its own center. Simply adjust the three dials on the F. & H. Compound Angle Vise and your job is set for milling, drilling, reaming, die sinking, etc. The F. & H. Compound Angle Vise is made in various sizes to handle light and heavy work. Write for complete literature.

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 Hydraulic Die Casting Machine



The new Model 200 High-Pressure Die Casting Machine has been designed for rapid, economical die casting. The unit is capable of locking dies with tremendous pressure to produce castings with a minimum of flash, with strength to resist stretch, distortion or breakage. Among the features incorporated in this machine are automatic timing, combined with selective manual controls; generous die area; large die

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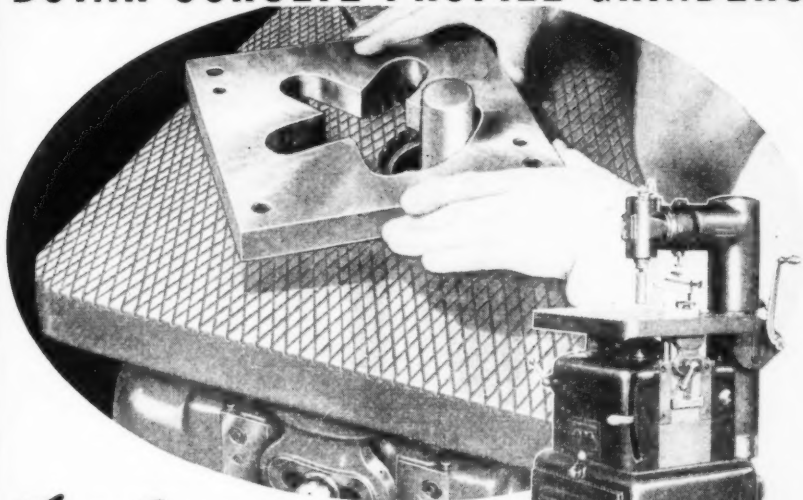
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Fast, Accurate CONTOUR GRINDING IN THE TOOL ROOM...IN PRODUCTION

Boyar-Schultz Profile Grinders save time in grinding inside and outside contours, irregularly shaped profiles, die clearances and many other difficult grinding tasks.

Boyar-Schultz No. 2 Profile Grinder

A heavy duty floor model available with single or dual spindles which turn at 10,000 R.P.M. with vertical oscillations. Rapid stock removal even with wheels as small as $\frac{1}{2}$ " diameter. Uses wheels $\frac{1}{2}$ " to 3"

Boyar-Schultz No. 1 Profile Grinder

Bench model Spindle speed of 20,000 R.P.M. with vertical oscillations. Accommodates wheels $\frac{1}{8}$ " to 1" diameter. A highly efficient tool that performs in minutes, much of the work that formerly required hours.



Boyar-Schultz CORPORATION

plates, wide spacing between tie-bar centers making possible quick insertion of large dies; sure-fire shot control mechanism; and hydraulic controls for ejection and core pulling.

Also to be shown:

"Dialmatic" Cleveland AB Automatic Turret Machine

Model 400 Hydraulic Die Casting Machine

Model A Single Spindle Turret Machine

Model J Double-End Machine

CLEEREMAN MACHINE TOOL CO.

CHICAGO 6, ILL.

BOOTH NO. 123

Electronic Control Jig Borer

Power drive has been added to the table of this machine by means of electronically controlled motors to provide pre-positioning control, power traverse, and a full range of milling feeds for further reducing the time required to complete a given operation, as well as to reduce manual effort. The power drive is secured by two individual motors, one for each direction of table travel, with the speed controlled by a common electronic panel, so

that the proper rate of feed can be obtained for milling in all directions. A rapid traverse rate of 50" per minute is available for indicating and aligning work, advancing rapidly to the milling cut, and for pre-positioning work before boring.

Also to be shown:

Cleereman Model 325 Drilling Machine
Round Column and Box Column Drilling Machines

CONE AUTOMATIC MACHINE CO., INC

WINDSOR, VERMONT

BOOTH NO. 617

1" Bar Machine, 6-Spindle Conomatic

This new machine is the manufacturer's introduction into the faster spindle speed field; it will demonstrate twenty-six outstanding features, twelve of which are claimed to be exclusively developments of Cone. The machine will produce two mating parts in one machining cycle, utilizing twenty-five tools and six attachments.

Also to be shown:

5" Four-Spindle Machine

2-5/8" Six-Spindle Conomatic

1-5/8" "Multi-Single" Bar Machine



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Accurate, fast and SAFE threading in a lathe at high speeds, consistently producing top quality threads, is a distinction that makes Grip-Slide an outstanding development in the small tool field for short-run work. Tool and die makers are amazed at the performance of Grip-Slide Threading and Tapping Tools.

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Now the school bus roars right past!

THE LITTLE RED SCHOOLHOUSE—home of a hundred pleasant memories of men who left it to build America—served well, had its day, and is going, going—or gone. Today, the community school bus, freighted with the hopes of a new time, roars right past to the big central school—advanced, scientific and better.

Going or gone with the little red schoolhouse, are countless industrial tools and methods you know. Once they were good, but now they're a drag on production. Efficient cutting tools today are tipped with carbide instead of steel.

When you install Nelco Carboly-Tipped Cutters, and cut 100 slots in 1.4 hours instead of 3.2 hours—that's progress! That's cutting cost. That's boosting output. That's getting more pieces per man-hour. That's getting the jump on "little-red-schoolhouse" competition. That's just plain common sense.

Nelco Carboly-Tipped Cutting Tools, with their tough, all-alloy steel bodies, can be mounted on standard equipment. They give you greater precision, finer finish, less tip breakage, more production, more profit. Let a Nelco Service Engineer show you how a moderate outlay for these modern tools will pay you many times over.

NELCO CARBOLY-TIPPED TOOLS
ARE **Sandwich Brazed**



Every modern technological development is utilized in making Nelco the finest of all carbide-tipped tools. Sandwich brazing is one example of that. A strip of non-ferrous metal between cutting edge and tool permits expansion and contraction—increases the life of every Nelco tool.

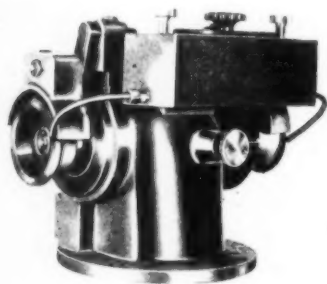


370 HAMILTON AVENUE, BROOKLYN 31, NEW YORK

**COVEL MFG. CO.
BENTON HARBOR, MICH.**

BOOTH NO. 636

Nos. 12 and 22 Universal Cutter and Tool Grinders



Feature new type spindle assemblies designed especially for use with diamond

wheels in grinding carbide cutters. The cartridge type, spring loaded, precision ball bearing, sealed-for-life spindle has reversible rotation so that rough and finish grinding can be accomplished without changing wheels or disturbing the setup. Coarse and fine wheels are mounted at the two ends of the spindle and the head swivels 180 degrees to place either wheel in working position. The rotational direction of the spindle is push button controlled and this feature is convenient in making setups especially when grinding away from the cutting edge. A tank mounted on the head provides constant flow of lubricant to either or both wheels to insure clean, cool cutting.

Also to be shown:

No. 15 6" x 18" Hand Feed Surface Grinder

No. 20 6" x 18" Hydraulic Surface Grinder

No. 6 Universal Cutter and Tool Grinder

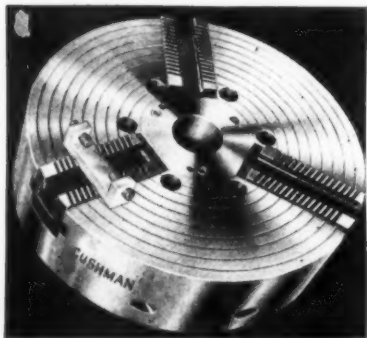
WFI Yankee Twist Drill Grinder

No. 44 Yankee Twist Drill Grinder

**CUSHMAN CHUCK CO.
HARTFORD 2, CONN.**

BOOTH NO. 271

Air Operated Chucks



These accessories will be demonstrated in operation, as well as a comprehensive display of wrench operated chucks. Illustrated is the new Accralock Serrated Ad-

justable-Jaw Air Operated Power Chuck. Various types of Cushman Chucks will be shown, including a selection of Screw Adjustable-Jaw, Manufacturing and Compensating Jaw styles, as well as 2-jaw gib type and round body chucks and collet chucks. Wrench Operated Chucks and collet chucks for the newer standard types of lathe spindle noses will also be exhibited.

**CUTLER-HAMMER INC.
MILWAUKEE, WIS.**

BOOTH NO. 39-A

Manual, Magnetic, and Electronic Controllers

The featured unit is the new diaphragm type timer which will provide for either time delay after energization or time delay after de-energization. Adjustable by screw driver, the new timer will provide consistent time intervals, ranging from 3/10 of a second to 3 minutes. It is available with either one or two timing periods in a single compact unit.

Also to be shown:

**Cutler-Hammer Control Accessories
Cutler-Hammer Control Components**

DAVIS AND THOMPSON CO.
MILWAUKEE 14, WIS.

BOOTH NO. 201

**No. 2-A Roto-Matic Continuous Rotary
Double End Drum Type Milling Machine**

Fixture designed to take a variety of sizes of bearing caps while rough and finish milling bottom, joint faces, sides and ends. Cutter spindles all have micrometer endwise adjustment. In addition, finishing spindles have patented adjustment for heel clearance of cutters.

Also to be shown:

**No. 1-A Roto-Matic Continuous Rotary
Double End Drum Type Milling Machine**

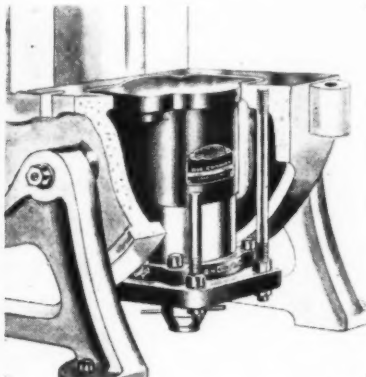
8 LV Roto-Matic Vertical 8 Spindle Continuous Drilling Machine

12 V Roto-Matic Vertical 12 Spindle Continuous Drilling Machine

DAYTON ROGERS MANUFACTURING CO.
MINNEAPOLIS 7, MINN.

BOOTH NO. 14-C

Universal Pneumatic Die Cushions



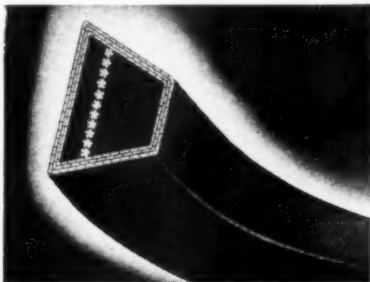
Representative sizes of die cushion equipment, in capacities of from 1 to 500 tons will be displayed, with installation demonstrations. The primary objective of pneumatic die cushions is to eliminate and

supersede springs and rubbers commonly used for various deep drawing operations. The new Model D-1, illustrated, includes an adjustable handwheel stop, allowing the press operator to stop the hardened and ground pin pressure pad at a predetermined lift. It is provided with a leader pin or cylinder rod which guides the pin pressure pad compensating for off-center loading.

**THE DAYTON RUBBER
MANUFACTURING CO.**
DAYTON 1, OHIO

BOOTH NO. 328 G

Dayton Thorobred V-Belts



These products are now made with Rayon Cord, which minimizes stretch, increases flex strength, and lengthens V-Belt life. The rayon is of the continuous filament, high tenacity type, and is especially processed for use in V-Belts. These filaments are twisted together to form a cable-like cord. This method of manufacture necessitates fewer take-ups and less maintenance, since this type of rayon combines high strength with the greatest flexibility, enabling belts to flow smoothly around pulleys while transmitting power at maximum efficiency.

Also to be shown:

Dayton Cog Belts

Steel Cable V-Belts

Double-Angle V-Belts

Connector-Type V-Belts

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DEFIANCE, OHIO**

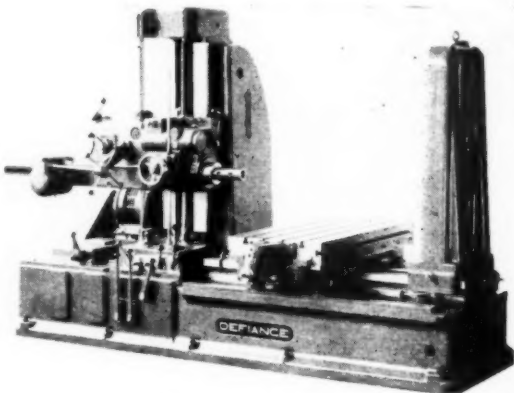
BOOTH NO. 118

Horizontal Boring Mill

The Defiance Model 25A Horizontal Boring Mill is provided with out-board bearings which are integral with the machine, insuring exact alignment at all times, eliminating separate adjustment. The two central guiding ways insure rigidity and avoid any side-slip tendency. Cross travel is equal to the full table length. Since high speeds are attainable on the main spindle, gaining the advantage of bigger bearing support, it enables maximum use of carbide tipped tools. Centralized controls on the unit provide greater ease of operation.

Combined with the Boring Mill is the Defiance Milling Attachment, which allows heavier cuts and greater precision. Designed to use a 2½" diameter facing cutter

with a 2½" adjustment of its spindle, it is furnished standard so that it will run at the same RPM as that of the boring mill. The spindle shaft is supported at both ends in Timken Precision Pre-Loaded Bearings, and



the connecting pinion and gear shafts are mounted in Timken Thrust and Radial Type Bearings. The extension out from the face of the spindle case on the boring mill is 18".

**THE DOALL COMPANY
DES PLAINES, ILLINOIS**

BOOTH NO. 37

"Handraulic" Surface Grinder



This new unit, Model GH-1, combines the features of finger-tip control of the hand operated grinder with the automatic power feeds found in hydraulically powered machines. Instead of a hand-wheel connected to the table by rack and pinion, there is a direct coupled hydraulic cylinder to power the table movement. Starting, stopping, and reversing the table is controlled by a self-centering four way valve operated by a convenient hand lever. Table travel speed, variable from 5 to 50 feet per minute, is controlled by a valve next to the directional control lever. Actual table travel is 20", and cross travel 7½".

Also to be shown:

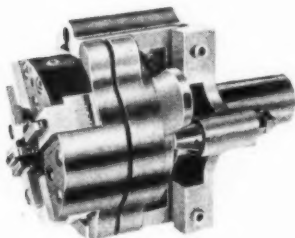
Cutting Tools, Band Saws, and Accessories.

At DoAll Plant: separate machine tool exhibit, transportation provided.

**THE EASTERN MACHINE SCREW CORP.
NEW HAVEN 6, CONN.**

BOOTH NO. 160

Special Die Heads



The H. & G. Special Die Heads for cutting taper pipe threads control taper, diameter, and length of thread. Besides producing pipe threads that are correct for

taper and fit, they eliminate objectionable chaser marks usually left along the thread when a jam cut is made by an ordinary self-opening die head.

Also to be shown:

Complete line of H. & G. screw thread cutting equipment

**EX-CELLO CORPORATION
DETROIT 6, MICHIGAN**

BOOTH NO. 518

Vertical Precision Cylinder Boring Machine

Cylinders can be precision bored with extreme accuracy at high production on this machine. Suitable for automotive engine blocks, it can also be used for boring holes in any part where accuracy of roundness and straightness is required. The unit is built for maximum rigidity, freedom from vibration, and long service life. When equipped for multiple boring operations, the spindles are driven through worm gears with an exceptionally large load capacity.

The spindle slide is hydraulically operated, and can be controlled electrically or

Introducing the "BULLDOG"

straddle knurling tool that does a most perfect knurling or serration job in one passage.

NO MORE

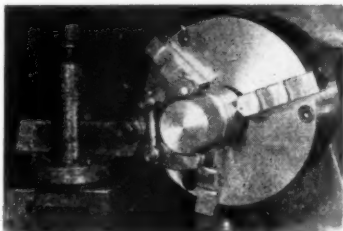
ordeal to do a passable knurling job in three or four passages.

NO MORE

such strain and stress upon the lathe spindle and crossfeed screw as happens when you use a "pusher" type knurling tool.

INSTEAD THIS NEW KNURLING TOOL

Turns an exasperating job into a simple and easy operation. All you do is: bring the knurling tool over the work piece and close the jaws to the required depth. Lock the pivot joint and presto! In one passage you obtain the most perfect knurl or serration imaginable!



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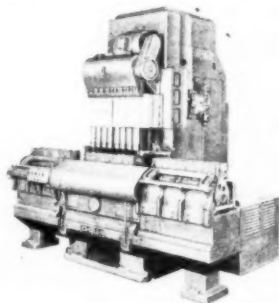
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manually. Two adjustable rates of forward speed and a fixed rate of rapid approach and return are available. The hydraulic control panel is mounted to the



side of the machine column, and can be removed without disturbing any hydraulic lines. The electric panel is mounted at the rear of the column at a suitable height for trouble-free operation and inspection.

Also to be shown:

Automatic Piston Boring Machine

Precision Thread Grinder

Special Automatic Valve-Grooving Machine

Automatic Tool Grinder

ENCO MANUFACTURING CO.

CHICAGO 39, ILL.

BOOTH NO. 648

Turret Toolposts and Tailstock Turrets

The Toolpost Turrets will feature 12 station indexing and hardened tool blocks



Save Space and Lifting

Yohe Racks take less floor space—hold more stock and require less lifting. Four arm rack, 51" high stacks, 10,000 lbs. Five arm rack 57" high holds 12,000 lbs. flat or round stock—at safe lifting heights. Use against wall or back-to-back in center of room.

Let us send details and prices.

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503 Mahoning Rd., N.E. Canton, Ohio

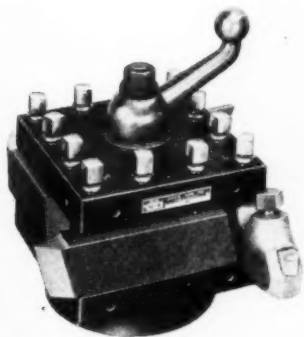
and counterposts. Twelve stations in the square turret instead of the usual 4 positions permit 3 different working positions for each tool mounted. Spaced 30° apart, the 12 stations make the turret highly adaptable, and provide a quick set-up for threading. When the lathe compound is

set over 30° for the feed-in on threading, the turret and tools remain square with the work.

THE FAFNIR BEARING CO.
NEW BRITAIN, CONN.

BOOTH NO. 438

Fafnir Ball Bearings



NEW CUTTING TOOLS

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issued monthly listing war surplus H.S. drills, taps, dies, end mills, milling cutters, reamers and many other good buys.

For screw machiner we have in stock H. S. left hand drills, Reed Kauris, box tools, floating holders, etc.

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SID TOOL CO.**

183 Grand Street, New York 13, N. Y.

Because of the importance of spindle bearings in the machine tool field, this firm will present a varied line of spindles from widely known concerns, Fafnir-equipped, most of them cut away to reveal bearing applications, operation, and lubrication. Included will be large and small wheel heads and work heads, as well as live centers. In addition, Fafnir will show cutaway spindles from its own research department to illustrate features of a line which it has designed as an aid to machine tool builders.

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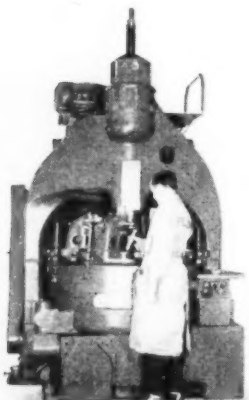
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**THE FELLOWS GEAR SHAPER CO.
SPRINGFIELD, VERMONT**

BOOTH NO. 107

Planetary Gear Shaper



This machine represents a revolutionary idea for this type of unit, and incorporates several unique features. It is of compact and massive design, and employs a large gap-type cutter, approximately 16" in diameter, around which the work planets. This cutter is reciprocated, but does not rotate. The work is held on individual work-spindles carried in the rotating turret, which are driven by individual worms and index wheels that are kept in step with turret rotation. These spindles are held in aprons which are provided with relief-

ing mechanisms which withdraw the work from contact with the cutter when the latter is on the return, or non-cutting stroke.

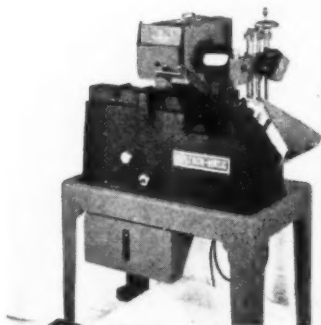
Also to be shown:

**Fellows Gear Shaper
Gear Shaving Machine
Fellows Thread Generators
Helical Cutter Sharpening Machine
Gear Shaper Cutters and Tools.**

**FEDERAL PRODUCTS CORPORATION
PROVIDENCE 1, R. I.**

BOOTH NO. 47

Sortron-Matic Gages



These units represent the manufacturer's entrance into the field of automatic gaging through the use of electronics. The advantage of electronics is the accuracy, speed in controlling automatic motion to operate and control automatic feeds and sorting devices in combination with mechanical operations, such as the automatic electronic sorting gage, which automatically gages the diameter of piston pins throughout the length, as well as at single points. This gage automatically sorts the pins into three categories, oversize, undersize, and correct, at a high rate of speed and accuracy.

Also to be shown:

**Federal Electricator
Federal Snap & Thickness Gages**

*For
Fast, Accurate
Metal-Cutting
Use*

KENNAMETAL CEMENTED CARBIDE
TOOLS, BLANKS, and MILLING CUTTERS

KENNAMETAL Inc.
LATROBE, PA.

**THE FOSDICK MACHINE TOOL CO.
CINCINNATI 23, OHIO**

BOOTH NO. 15

Sensitive Radial Drill

This new development has a fixed arm which can be swung 360°, and has a movable table which moves vertically around a round column; its arc is also 360°. This design places the table in the proper position for any job suitable for this machine. The table is actuated either by hand or by power to its indicated posi-

tion. The head remains at the same height, placing the controls within easy reach of the operator.

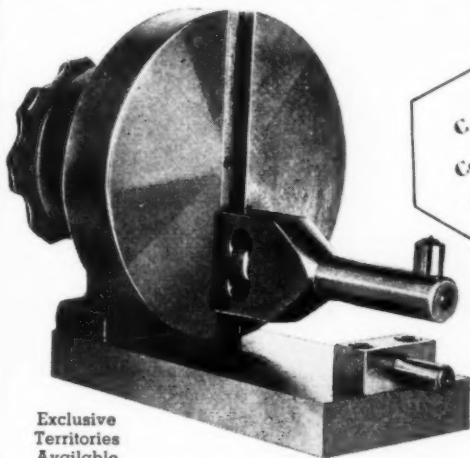
The semi-automatic tapping control, entirely new in design, is available for this machine.

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**Fosdick Jig Borer
Single Purpose Sensitive Drill
13" to 19" Column Radial Drills
Simplified Upright Drill**

RADIUS EMERY WHEEL DRESSER **for PRECISION PERFORMANCE**

A time-saving device designed to meet the demand for an inexpensive Radii Wheel Dresser for either convex or concave radius dressing.



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Concave Radii—2½"
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Shank Diameter—½"; length 1½"

Tool Movement—¾" adjustable in thousandths

Tool Diameter—¾"

Hardened and tempered screw, tool block and shank.

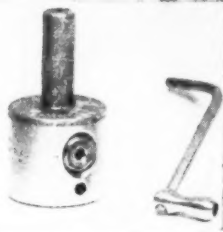
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SMITH BORING CHUCK CO.

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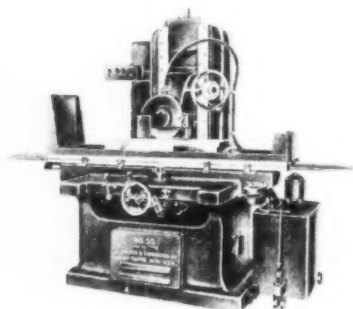
Manchester, Connecticut



GALLMEYER & LIVINGSTON CO.
GRAND RAPIDS 4, MICH.

BOOTH NO. 230

No. 55 Hydraulic Feed Surface Grinder



This surface grinder is built around a special high column, and is equipped with a 20" diameter wheel, to enable dies to be ground with guide pins in place. The

working surface of the table is 12"x36", and the longitudinal and transverse movements are sufficient to permit the operator to clear the entire working surface of the table with the standard wheel. The capacity under the full 20" diameter wheel is 17", and 18" of vertical movement of wheel head provided. Power rapid travel of the wheel head is standard equipment on the machine.

Separate motors are furnished for driving the hydraulic mechanism and the grinding wheel spindle, making it possible to eliminate the use of the idler jack in conjunction with the spindle drive, and to provide for two usable spindle speeds.

Also to be shown:

Hand Feed Surface Grinders

Hydraulic Feed Universal and Tool Grinders

Twist Drill Grinders
Tap Grinders

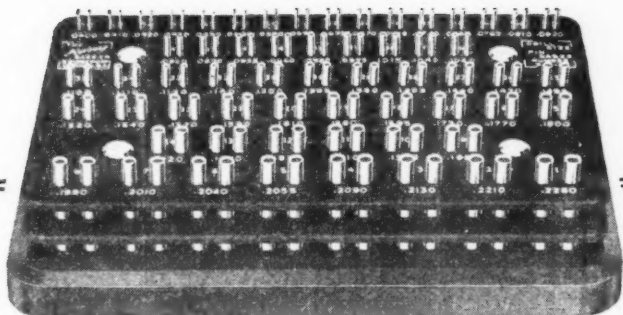
Combination Drill and Tap Grinders

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Marked steel head
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Turner plastic hammers come in 15 different sizes and types — all statically balanced. Ask your mill supply house or write.



DRILL SIZE PIN GAGES

Class Z Accuracy

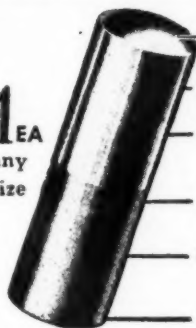
LETTER SET—52 gages in 26 pairs from A to Z, \$45 set.

FRACTION SET—60 gages in 30 pairs in steps of 1/64" from 3/64" to 1/2", \$50 set.

NUMBER SET—120 gages in 60 pairs from 1 to 60, \$90 set.

All sets include stands ... Prices F.O.B. Bridgeport, Conn.

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Polished Radius Top

TOLERANCE $+.0001$ $-.0000$

Overall Length 1 1/2"

LOWER HALF CONCENTRIC
TAPERED for easy insertion

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Flat Ground Bottom

Sets in pairs of gages for checking any number of similar holes. Stands have 3 plates and cover so that gages stand upright. Drill size is plainly stamped in front of each gage hole, together with decimal equivalent to the ten thousandth of an inch.

IMMEDIATE DELIVERY — 116 SIZES

Check or M.O. should include .08c postage for quantities less than Set. Sets shipped Express Collect. No C.O.D.'s.

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**GEAR GRINDING MACHINE CO.
DETROIT 11, MICH.**

BOOTH NO. 670

Geargrind Oscillating Grinder.

This Universal Oscillating Precision Grinder was designed and developed to handle external and internal cylindrical surfaces; external conical surfaces and internal tapers; generated or formed spherical external and internal surfaces, or annular surfaces such as ball bearing races and fillets. Combinations of the



**The Complete Line
for Every
Industrial
Purpose**

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421 Canal Street New York 13, N.Y.

above are ground in one set-up insuring extreme accuracy and perfect blending of straight to curved surfaces. The grinding wheel spindles are mounted in preloaded, precision bearings; the spindle and motor are mounted on cross slides with micrometer screw feeds; both the longitudinal and cross slides may be equipped with dial indicators.

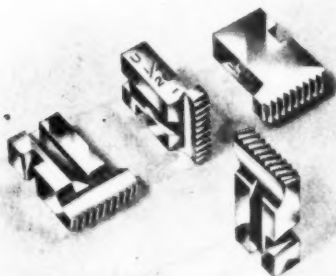
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**Constant Velocity Universal Joints
Ballflex Anti-friction Flexible Coupling
Formsprag Overrunning Clutch**

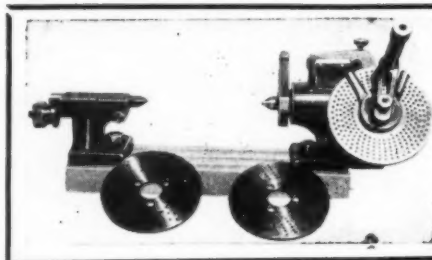
**THE GEOMETRIC TOOL CO.
NEW HAVEN 15, CONN.**

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Supermetric Ground Thread Chasers



All threads and other surfaces of the chasers are ground to a high finish by a new method of manufacture, providing surface smoothness and precision. They are now available in all National Standard



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PLAIN DIVIDING HEAD

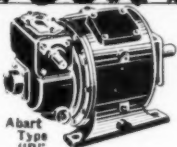
6" swing. Overall length 6 1/2". Base 3 1/4" x 3". Spindle has No. 7 B & S taper and take-up collar for end thrust. Threaded spindle nose 1 1/8" dia., 12 tds. U.S.S. Plates cover entire range of B & S chart. Worm wheel ratio 40:1. Complete with 3 dividing plates, 4" dia., one 24-notch indexing plate and tailstock.

\$125.00 f.o.b. Cincinnati

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Finer gradients of speed control are essential in almost every industry today. Abart not only furnishes correct reducers, but out of long experience counsels on installation and application. Over 75 types and sizes worm, spur, and combinations.

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ABART GEAR AND MACHINE CO.

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thread sizes for the 5/16" Style DS and Style DJ Die Heads in both regular and projection types. The Chasers will be moderately priced. Through new methods of grinding, Geometric is able to build greater precision, uniformity and longer life into its products.

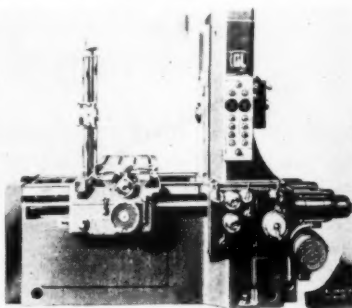
**GIDDINGS & LEWIS MACHINE TOOL CO.
FOND DU LAC, WISCONSIN**

BOOTH NO. 315

Model 00-T Boring, Drilling, and Milling Machine

Accuracy and versatility are incorporated in the design of this new table type machine which will accommodate work up to an 18" cube in size, and 1000 lbs in weight. The machine meets exacting standards for finished dimensions in production milling and boring of small work. With the tracing attachment it is used effectively for die sinking work, such as plastic and die casting molds, hammer forging dies, etc. It may be employed for precision thread cutting when equipped with a thread lead device. The unit will handle a

wide range of small-lot work requiring accuracy, but where the expense of jigs and fixtures is not justified.



All machine movements are regulated by electronic and mechanical controls in a convenient centralized panel.

Also to be shown:

**Model 300-T Boring, Drilling, and Milling Machine
Precision Way Grinder**

CLOSED	TRADE		CLOSED	MARK
Plain Type	<h1>CONTINUOUS HINGES</h1>			Offset Type
<h2>AUTO MOULDING & MFG. CO.</h2>				
<p>1110 E. 87TH ST. CHICAGO 19, ILL.</p>				
<p>THREE-FOURTHS OFFSET. SEMI-OFFSET</p>				

Open

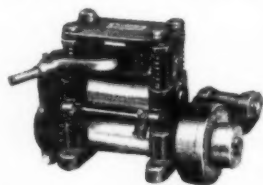
All hinges shown can be furnished with special holes, cutouts and bends to blue-print in metals to suit the job.

Close

Specifications:
Open Width 3/8" to 6"
Gage Material .040 to .125
Pin Diameter .101 to 3/8"
Lengths to 120"

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- **COST NO MORE THAN OTHER COMPARABLE FEEDS**
- **SIMPLE DESIGN — FEWER PARTS TO WEAR**
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Standard units provide up to 18" advance. Larger feeds with longer advance can be supplied.

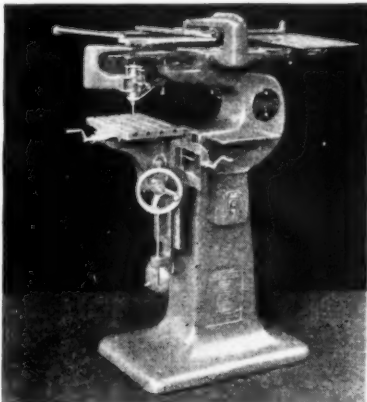
We also manufacture stock reels, stock straighteners, wire straighteners and scrap cutters.

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**GEORGE GORTON MACHINE CO.
RACINE, WIS.
BOOTH NO. 2**

Gorton 2-Dimensional Pantograph Machine



This unit, Model 3-U, is primarily designed for general engraving, die, mold, or stamp cutting and profiling on flat work or curved work having a uniform curvature; the manufacturers claim that it is easy to set up for a wide variety of completely automatic operations.

Range of ratios includes from 1:1 to 40:1. The longitudinal feed of the work table is 10". The cross feed of the work table, on work up to 3/4" thick is 5"; over 3/4" thick, the cross feed is 2 7/8". The vertical feed of the work table is 9 3/4". The table itself measures 8" x 12", and includes four 3/8" T-slots. Spindle speeds of the unit include six, from 3800 to 15000 RPM. The machine will swing dial and engrave to the center of same, work up to 36" in diameter and 3" thick.

Also to be shown:

**3-Z 2-dimensional Pantograph Machine
3-L 3-dimensional Pantograph Machine**

**GOULD & EBERHARDT, INC.
IRVINGTON 11, N. J.
BOOTH NO. 41**

G & E Shapers

Two new developments are incorporated in the latest model G & E Shapers: 16 ram



No. 83 Illustrated

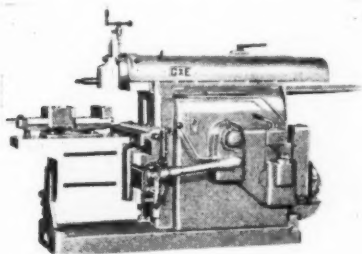
PALMGREN ROTARY TABLES

Turn your Drill Press into vertical Miller. No. 83 Rotary Table has 8" circular table, dual cross feed 2 1/2" each side of center or 4 1/2" overall. Rotary feed calibrated in degrees, cross feed in thousandths. No. 83 Table—Dual cross feed and rotary feed...\$49.50
No. 82 Table—Dual cross feed only...\$39.75
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8384 South Chicago Ave. Chicago 17, Ill.
Write for Circular 109 Phone Saginaw 9675

speeds and all-helical gear drive. The ram speeds are easily and quickly selected by two gear-shift levers. The 16 ram speeds are arranged in geometric progression, and provide an exceptionally wide range of strokes to suit all classes of work. The main double-crank gears as well as the se-



lective transmission gears are single helical type, with tooth form designed for maximum tooth contact and smooth action. Antifriction bearings absorb the thrust for the selective transmission so that the shifting mechanism is free of thrust and wear.

The rams have been made wider, and are strengthened to minimize deflection. The ram guides are finish-ground. All major components, such as the frame, ram, cross-rail, crank gears, and lever, are Meehanite castings.

The power rapid horizontal traverse mechanism for the work table, operative opposite to the feed set, is standard equipment. Power rapid vertical traverse also may be provided for elevating and lowering the work table.

Also to be shown:

G & E Worm Gear Hobbing Machines

GARDNER MACHINE CO.

BELOIT, WISCONSIN

BOOTH NO. 429

Double Spindle Grinder

This unit, designated as No. 626-26", is a completely new flat surface grinding machine, built for numerous parallel surface operations. It will be equipped with a feed-through type of fixture, so that parts having parallel flat surfaces will pass through between the opposed abrasive members in a constant succession, one piece following the other in continuous operation, resulting in considerably increased production.

Also to be shown:

Gardner Disc Grinders

Wire-Lok Abrasive Discs.

SKF INDUSTRIES, INC.

PHILADELPHIA 32, PENNA.

BOOTH NO. 666

Precision Anti-Friction Bearings

The SKF precision anti-friction bearings are designed specifically for speeding the use of metal-cutting machines equipped with carbide-tipped tools, and providing them with greater cutting accuracy and spindle rigidity. Featured will be cut-away models of precision bearings, mountings on machine spindles, and the first public showing of an oil mist lubricator designed to lengthen the life of spindle bearings. The units will include single and double row cylindrical roller bearings, thrust ball bearings, single row radial ball bearings and angular contact ball bearings.

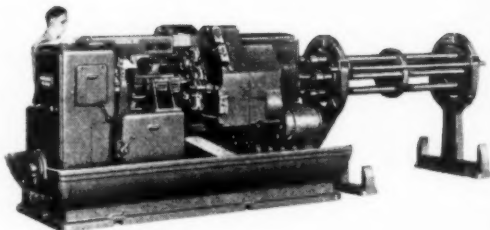
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ROCKFORD, ILL.**

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**Six-Spindle Automatic
Screw Machine**

This new development is now available with an arrangement to handle lead-screw threading, thus eliminating many secondary operations, and stepping up production of work requiring threads with an accurate lead. The threading unit is a combination cam-and-lead-screw operated mechanism and can be used in 3rd, 4th, and 5th positions. The lead-screw attachment itself consists of a threading spindle unit, a removable 1" O.D. lead screw and bronze nut, safety shear keys, an outboard bearing

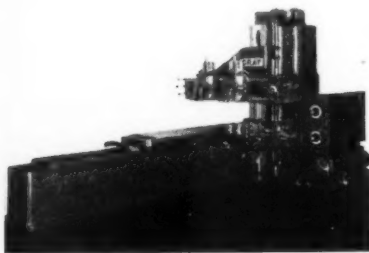


support, and a yoke to operate self-opening die heads.

**THE G. A. GRAY COMPANY
CINCINNATI 7, OHIO**

BOOTH NO. 501

Gray Opside Planer Cub



This unit incorporates a completely new design. With table speeds up to 33 feet per minute, this unit enables for the first time the efficient use of high speed Carbide planer tools for cutting cast iron or

steel. The machine is driven by a new 15 HP simplified variable voltage drive, through the medium of the new Gray space saver drive, with full floating drive shaft. The table (30"x96") is provided with Gray loop lubrication, and the Planer features Gray table safety stop and Synchro-Mesh table replacer.

Also to be shown:

**Heavy Duty Double Housing Planer
Floor Type Horizontal Boring, Drilling
and Milling Machine
Gray Carbide Tipped Planer Tools**

**KNURL it Easily, Quickly,
Safely**

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Knurls $\frac{1}{8}" \times \frac{1}{4}"$

Two Sizes:
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SUNDSTRAND DRILLING AND CENTERING MACHINES

Fast, accurate drilling or centering on one or both ends of workpieces can be maintained consistently with the new Sundstrand 53-A Drilling and Centering machine. Girder type bed construction provides extra rigidity, insures accuracy. Spindle speeds are quickly and easily changed with vee belts and pulleys.

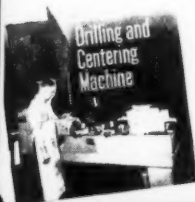


Illustration at top shows power operated vises. Other illustrates hand operated vises.

The 53-A Drilling and Centering machine is usually furnished with power or hand control but can also be furnished with a combination of power feed and hand operated vises or manual feed and power operated vises. With power vises operator can clamp long work near each end from one central push button station.

FREE DATA

This new bulletin contains complete specifications of this new, modern Sundstrand Drilling and Centering machine. Write for your copy today. Ask for bulletin No. 464.



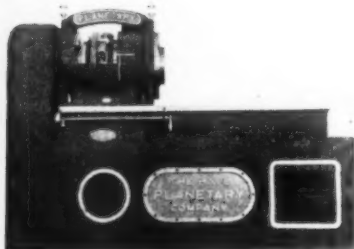
SUNDSTRAND MACHINE TOOL COMPANY

2535 Eleventh St. Rockford, Ill., U. S. A.

**THE HALL PLANETARY COMPANY
PHILADELPHIA 29, PA.**

BOOTH NO. 141

Hall Planetary, Style C



The Hall Planetary is a high-production, precision thread and form-milling machine, used where a combination of production and accuracy is indicated. A variety of jobs can be machined on the Planetary ranging from threading spark-plugs to threading or circular form milling diameters of 13" x 7" long. The machine is adaptable to larger work.

Also to be shown:

**Hall Planatester
Hall Standard Arbor**

**HANCHETT MANUFACTURING CO.
BIG RAPIDS, MICH.**

BOOTH NO. 612

Hanchett Badger Grinders

The Hanchett double spindle Badger grinder is used for grinding two opposite parallel surfaces simultaneously. It has two separate spindles, and grinding members of various kinds are attached to the inner or adjacent ends of each spindle. In the standard hand operated machine, a suitable work rest extends in between the grinding members, and the part to be ground is laid upon this work rest by means of a holder or fixture designed for the purpose, and is pushed in and out between the wheels. Hand or foot treadle is used to open the wheel heads to allow the work to enter, and weights suspended on arms at the rear of the machine cause

the heads to close up to independently operated stop screws.

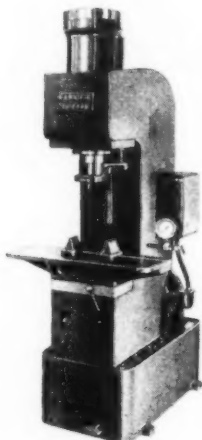
Also to be shown:

**No. 24 Rotary Surface Grinder
No. 24 Duplex Rotary Surface Grinder
Vertical Surface Grinder**

**HANNIFIN MANUFACTURING CO.
CHICAGO 24, ILLINOIS**

BOOTH NO. 411

Hydraulic and Pneumatic Power Equipment



The 25-ton Hydraulic Straightening Press, used in the manufacture of crankshafts, camshafts, axles, lathe spindles, gear shafts, and other machined parts, heat treated and then ground, is illustrated. By straightening or truing these parts after heat treating, grinding time is minimized. These presses may also be used in the finishing or forged steel parts, viz: air-plane propellers, which must conform to extremely accurate tolerances.

Also to be shown:

**Bench Type Hydraulic Press
35-ton Hydraulic Riveter
Hydraulic Multiple Piercing Unit
Pneumatic Presses
Hydraulic and Pneumatic Cylinders
Air Control Valves**

**HARDINGE BROTHERS
ELMIRA, NEW YORK**

BOOTH NO. 45

High Precision Machines

Hardinge Multi-Operations Chucking Machines will be in actual operation. Also in operation will be Hardinge High Speed Precision Second Operations Machines. Jobs produced on these machines will be on display.

Also to be shown:

Tool Room Screw Cutting Lathe
Plain and Universal Milling Machines
Vertical Milling Machines
Lathe Collets
Speed Collets
Collet Indexing Fixtures

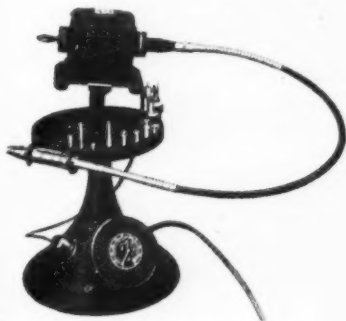
**R. G. HASKINS CO.
CHICAGO 12, Ill.**

BOOTH NO. 675

VB2 High Speed Grinder

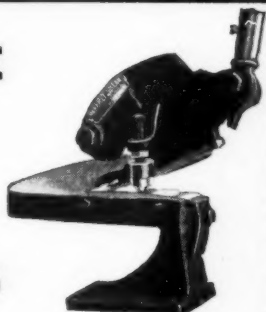
This unit is available in both pedestal and bench-mounted types. The VB2 grinder is furnished with a $\frac{1}{4}$ HP. special high torque motor that delivers 18,000 RPM Free Speed; it takes 115 volts on either AC or

DC, and operates in either vertical or horizontal position; it delivers an even flow of power for light hand grinding, finishing, polishing etc. A special spindle handles all mounted points and wheels with $\frac{1}{4}$ " or $\frac{1}{8}$ "



shanks. A reducing collet allows a range of tools up to 1" diameter wheels. The unit is equipped with a newly developed high speed, cool-running flexible shaft.

**CUT ANY SHAPE
BETTER
with BEVERLY
Throatless SHEARS**



The No. B-3 BEVERLY Bench Type Shear with Ball Bearing Hold Down handles $3/16$ " or No. 10 gauge stainless steel. This sturdy shear weighs 58 lbs. and is equipped with H. C. H. C. Blades for heavy duty service.

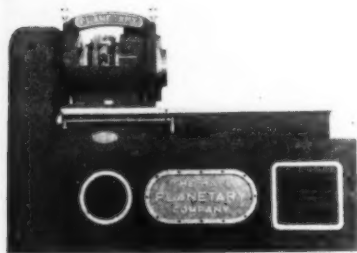
Let us send Bulletins giving full details on the BEVERLY LINE —

THE BEVERLY SHEAR MFG. CO., 3005 W. 110th Pl., Chicago 43, Ill.

**THE HALL PLANETARY COMPANY
PHILADELPHIA 29, PA.**

BOOTH NO. 141

Hall Planetary, Style C



The Hall Planetary is a high-production, precision thread and form-milling machine, used where a combination of production and accuracy is indicated. A variety of jobs can be machined on the Planetary ranging from threading spark-plugs to threading or circular form milling diameters of 13" x 7" long. The machine is adaptable to larger work.

Also to be shown:

Hall Planatester

Hall Standard Arbor

**HANCHETT MANUFACTURING CO.
BIG RAPIDS, MICH.**

BOOTH NO. 612

Hanchett Badger Grinders

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the heads to close up to independently operated stop screws.

Also to be shown:

No. 24 Rotary Surface Grinder

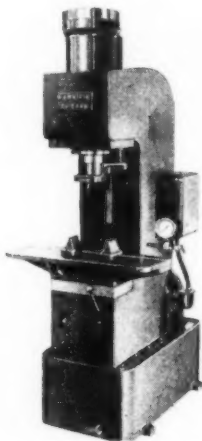
No. 24 Duplex Rotary Surface Grinder

Vertical Surface Grinder

**HANNIFIN MANUFACTURING CO.
CHICAGO 24, ILLINOIS**

BOOTH NO. 411

Hydraulic and Pneumatic Power Equipment



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Also to be shown:

Bench Type Hydraulic Press

35-ton Hydraulic Riveter

Hydraulic Multiple Piercing Unit

Pneumatic Presses

Hydraulic and Pneumatic Cylinders

Air Control Valves

**HARDINGE BROTHERS
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BOOTH NO. 45

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Lathe Collets
Speed Collets
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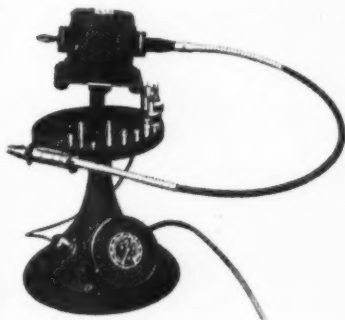
**R. G. HASKINS CO.
CHICAGO 12, Ill.**

BOOTH NO. 675

VB2 High Speed Grinder

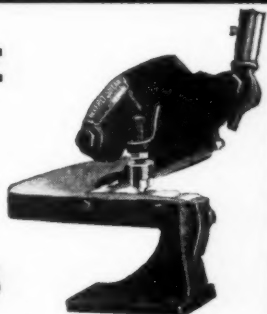
This unit is available in both pedestal and bench-mounted types. The VB2 grinder is furnished with a $\frac{1}{4}$ HP. special high torque motor that delivers 18,000 RPM Free Speed; it takes 115 volts on either AC or

DC, and operates in either vertical or horizontal position; it delivers an even flow of power for light hand grinding, finishing, polishing etc. A special spindle handles all mounted points and wheels with $\frac{1}{4}$ " or $\frac{1}{8}$ "



shanks. A reducing collet allows a range of tools up to 1" diameter wheels. The unit is equipped with a newly developed high speed, cool-running flexible shaft.

**CUT ANY SHAPE
BETTER
with BEVERLY
Throatless SHEARS**



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Slotting
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Cross Drilling

milling
fixture

**for
production
and tool room use**

KAM-GRIP covers the field for efficient drilling and milling at low cost. Versatile because of interchangeable anvils and bushings....fast cam-action, with automatic or manual operation, assures top production speeds and precision features.

Check up on KAM-GRIP before tooling your next job. Write for complete catalog and/or request our local representative to call if desired.

**MANUFACTURERS ENGINEERING SERVICE
415 SECURITY BANK BLDG. - TOLEDO, OHIO**

**HEALD MACHINE COMPANY
WORCESTER, MASS.**

BOOTH NO. 511

Bore-Matics

Motor and pumps mounted off the machine to avoid vibration and to keep warm oil out of contact with base. Improved idlers, cylinders, automatic way lubrication and refinements in hydraulics for smooth table motion. New wheelheads, work-heads and boringheads are permanently lubricated and sealed.

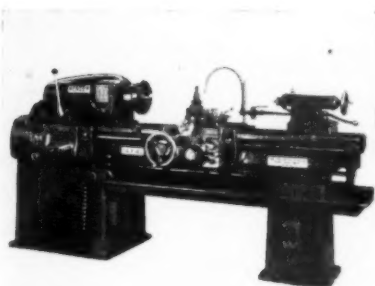
Also to be shown:

Tool sharpener
Surface grinders
Internal Grinders

**THE HENDEY MACHINE CO.
TORRINGTON, CONN.**

BOOTH NO. 105

**No. 2, 14" General Purpose Light Duty
Lathe**



Designed for general purpose, light duty work. Some of the features are remote controlled belt-shifting arrangement; spindle speeds from 30-1142 r.p.m.; 48 thread and feed changes; automatic lubrication throughout; and push button start and stop with warning pilot light.

Also to be shown:

9"x24" Tool and Gagemakers' Lathe

**E. F. HOUGHTON & CO.
PHILADELPHIA 33, PA.**

BOOTH NO. 47-D

Cut-Max Cutting Oils

Four new series of Cut-Max straight

cutting oils are being introduced, the Cut-Max 100 Series, which includes a range of viscosities of cutting fluids high in saponifiable content, but containing no sulphur or extreme pressure additives. The 200 Series is for heavy-duty machining, highly fortified with sulphur; included are five oils identical in additive content, varying only in viscosity. The 300 Series includes oils high in saponifiable content and active sulphur, but free from chlorine, for use on bright machined surfaces when any staining or dulling of the metal is to be avoided. The Cut-Max 400 Series consist of light-colored, clear oils, mildly but effectively treated, as cutting fluids for automatic lathes and production jobs demanding high speed and light feeds.

Also to be shown:

Houghton Lubricants and Packings

**HYATT BEARING DIVISION
GENERAL MOTORS CORP.
HARRISON, NEW JERSEY**

BOOTH NO. 433

Hyatt Hy-Load Roller Bearings

Design features and the versatility of

the Hy-Load line, of particular interest to engineers and designers, will be displayed. These cylindrical roller bearings are furnished in three diameter series, wide and narrow widths, in ten major types, for radial loads, or light or intermittent thrust loads. Four types have separable inner races, and two have separable outer races, permitting flexibility in machine design and assembly procedures.

**HY-LEVEL SCREW PRODUCTS CO.
CLEVELAND 13, OHIO**

BOOTH NO. 328-C

Liquid Pressure Bar Feed Attachment

This tool eliminates feed tubes, feed fingers, ball races, silencers, extended pusher rods, and other extras. Exclusive valve and packless piston designs make possible using the pump and coolant in the machine. Uniform pressure is applied only during the feed cycle. The bar lines up automatically, entering well into the collet. Bar end lengths are held to about 1 1/8". No bar ends remain in the spindle. Bars up to 3/32" over regular machine

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To tool users for plant extensions and improved methods

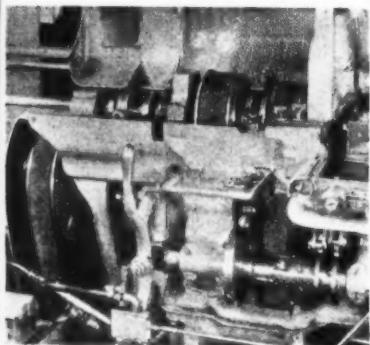
WHEN AND WHERE NEEDED...

Design Service Co. offers to manufacturers the facilities of its organization including 450 engineers, architects, designers and draftsmen. Complete staffs, maintained in New York, Newark, Cleveland and Philadelphia, are available by the day, week or job.

Tool manufacturers are reducing their engineering costs by using Design Service for complete tool design, patent preparation, or even the production of elementary tracings. Tool users everywhere profit by using this talent in the layout of plant extensions, including tooling-up procedure, structural steel and production methods. Years of experience are available in every phase of the machine tool field.

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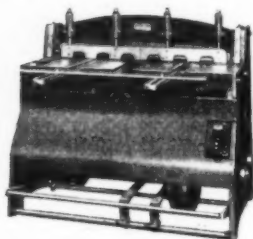
capacity size can be handled. These accessories are available for B. & S. Auto-



matic Screw Machines, Nos. 00, 0, 2, G, or regular, and for single-spindle Cleveland Automatics.

WHITNEY-JENSEN PRODUCTS
30 YEARS EXPERIENCE

POWER SHEARS



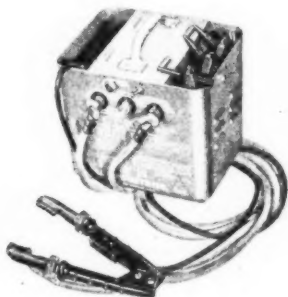
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FAST — DEPENDABLE
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115 FORBES ST. • ROCKFORD, ILL.

IDEAL INDUSTRIES, INC.
SYCAMORE, ILLINOIS

BOOTH NO. 448

Electric "Thermo-Grip" Soldering Tools



Operates on resistance heating principle. Can be used for long periods of time without overheating. Complete "Thermo-Grip"



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Demagnetizer AC Portable Type
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A low priced, highly efficient unit guaranteed to duplicate the performance of larger demagnetizers now on the market. Will last a lifetime. We invite comparison.

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consists of power kit and one or more of three soldering attachments. Has thumb switch for close heat control, modern design, light weight, is compact and portable. Handles of soldering tools are made of light weight plastic and have radiating fins which prevent excessive heat induction from carbon holders to handles. Secondary leads are made of flexible power cable insulated with lightweight, woven asbestos. Power pack also serves as carrying case.

Also to be shown:

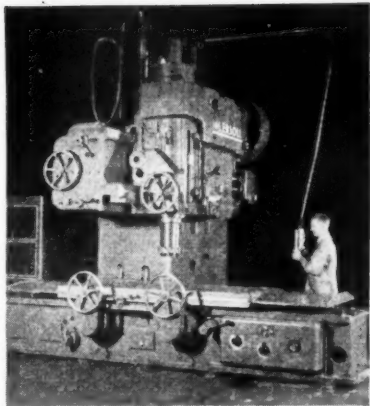
- Heavy Duty Live Centers**
- Portable Industrial Cleaner**

**THE INGERSOLL MILLING MACHINE CO.
ROCKFORD, ILL.**

BOOTH NO. 58

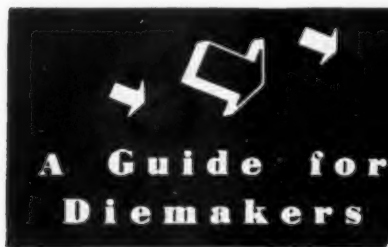
Vertical Spindle Milling Machine

This 80,000 lb. Ingersoll Milling Machine was designed and built for a particular job, and specific shop conditions in automotive die-making work; the unit is a typical example of this company's product.

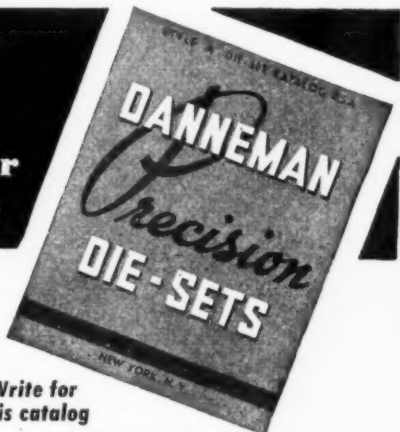
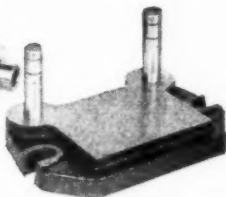


It incorporates the latest developments and engineering skill of its manufacturer. This will be the only operating model on display by Ingersoll.

The manufacturer will, however, show the large variety and type of their prod-



- Precision Bored on Master Plates



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this catalog**

ACME-DANNEMAN

*National distributors for
"Danneman Die Sets"*

207 Lafayette St., New York 12, N. Y.

SCHERR aids to precision — production

Control the Job From Start to Finish with the WILDER PROJECTOR



New horizontal type for production inspection, just out.

Throws a magnified shadow image of the part under inspection against an enlarged drawing of part.

Magnifications available, 10x to 200x. Horizontal work table for flat work. Center support and micrometer cross slides for checking forming tools, screw threads, hobs, etc. Eliminates all errors due to "feel". May be speedily operated, with little or no experience. Prevents costly errors and insures initial correctness from the start of a production run. THIS COMPARATOR can be equipped with a new circular type of Surface Illuminator.



THE SCHERR MAGNI-RAY

An invaluable inspection tool, because it magnifies the work under inspection, floodlights it as well, and gives the immense advantage of "two-eye seeing". No wonder thousands of Magni-Rays are serving in large inspection departments, and other thousands on precision machines or critical tool-room operations. The lens is ground by experts for true magnification. Heavy base permits swinging lens to any position any height to 14 in.

Three types—Model A, 3" lens, 1½ x plus. Model B, 3 x plus. Model C, 5" lens, 1½ x plus.

GAERTNER TOOLMAKERS' MICROSCOPE

For rapid precision checking of critical dimensions, angles, contours, etc. A scientific instrument with the rugged strength of a manufacturing tool. Valuable in both tool room and inspection department and absolutely required for thread inspection. You can see that last ten-thousandth with the Gaertner. You can instantly spot the slightest deviation from correct angle. All eyes see it alike, too—no arguments. Any toolmaker can use it. Wide range of templates for use with the template ocular head. Write for the bulletin. See us at the Machine Tool Show—Booth 663.



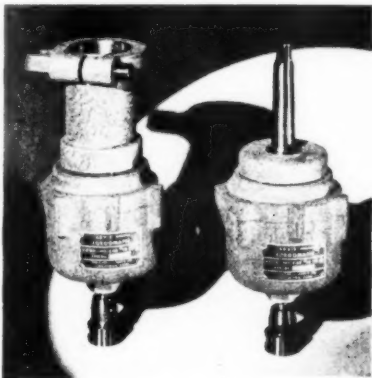
GEO. SCHERR CO., Inc.

198 - Lafayette St. New York 12, N. Y.

ucts by means of photographs and 1/8 scale wooden models; also will be shown the latest developments in milling and boring cutters which are a component in the design of such special machinery.

THE CHARLES L. JARVIS CO.
MIDDLETOWN, CONN.

BOOTH NO. 313-C



Jarvis Torqomatic

This new torque-driven tapper is an extremely efficient and productive tool; it is able to tap practically any material from soap to nickel steel with finger tip pressure. The torqomatic increases the number of tapped holes per hour, adds life to taps, and increases the operator's comfort and efficiency. The unit is available in standard and built-in models.

Also to be shown:

Dowding Custom-Finished Taps and Dies

**New NESTING TYPE
TOTE PANS**

20" Long x 12"
Wide x 6 1/4" Deep
16 Ga., drag holes,
handles both ends.

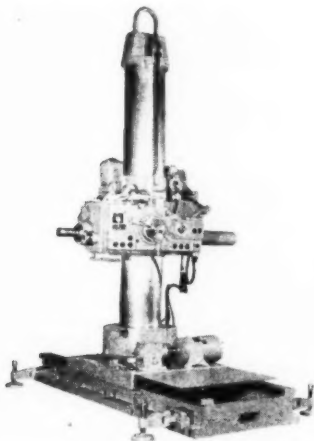
J. L. LUCAS & SON, INC.
BRIDGEPORT 5, CONN.

KAUKAUNA MACHINE CORP.

KAUKAUNA, WISC.

BOOTH NO. 117

Portable Horizontal Drilling and Tapping Machine



On the No. 1030 machine the spindle is 3" in diameter with a No. 5 Morse taper and 24" of continuous travel. The head is mounted to the side on a rigid swivel, permitting the head to be swiveled 45° in either direction. The head slide is mounted on the vertical cylindrical column for positioning through 360° and for raising and lowering by rapid transverse or inching through 48". Spindle drive is by a 7½ h.p. motor through 9 speeds, 45 to 800 r.p.m. Three power feeds are provided,

.003 to .012 inches per revolution.

Also to be shown:

Portable Universal Drilling & Tapping Machines, numbers 125-U, 125 HR, Indexing Table Boring Tools

KENNAMETAL, INC.

LATROBE, PA.

BOOTH NO. 570

Mechanically-held tools

These have a solid cylinder of Kennametal clamped vertically in a steel holder and backed by an adjusting screw. Features include Kennametal round can be indexed both ends, to provide a succession of cutting edges, without affecting initial relation to the work; grinding is simplified and less required—only the ends of the round insert need grinding, the contour is not disturbed; fewer tool changes are required and machine down time is reduced.

Also to be shown:

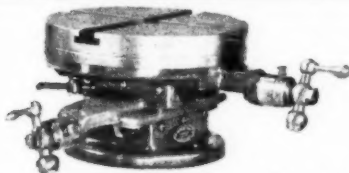
**Single point tools
Precision boring tools
Roll-turning tools**

**Accurate Hole Transfer Made Easy With
NIELSEN TRANSFER SCREWS**



Simply insert in holes, invert, strike sharply and you have centers and drill circles perfectly located. Reduce time and eliminate spoilage of other methods. 7 sizes U.S.S.—Inexpensive—last for years.

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NIELSEN TOOL &
DIE COMPANY
962 W. Eleven Mile Road,
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IMMEDIATE SHIPMENT

from stock—the famous **MASTERCRAFT 700-R** and **800-R** compound slide and rotary milling and layout table. A leader since 1936. Convert your drill press into a vertical mill for those light jobs. Eliminate expensive lathe face plate holding fixtures by using a Mastercraft table for precision boring and turning of multiple diameters. Consult your dealer or write to

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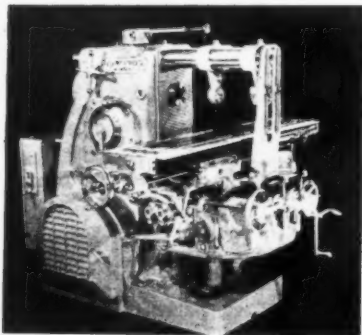
1054 Cahuenga Blvd.

Hollywood, Calif.

KEARNEY & TRECKER CORP.
MILWAUKEE 14, WIS.

BOOTH NO. 301

Milling and Boring machines



Eight of their refinements in machine tools will be demonstrated. These will in-

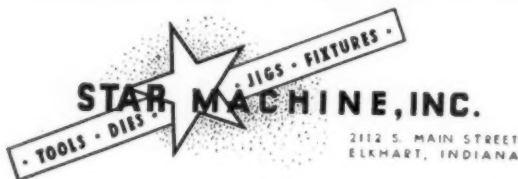
clude: Model 5D rotary head milling machine, bed type; automatic cycle control on standard knee type milling machines; three dimensional accuracy on Models B and C Automatic; a line of simplified milling machines; precision machines for milling and boring; improved cutter grinding technique.

KINGSBURY MACHINE TOOL CORP.
KEENE, NEW HAMPSHIRE

BOOTH NO. 410

Automatic Indexing Machines

The unit illustrated demonstrates 14 operations on three faces of the work. It combines 14 automatic units and a 60" automatic index table with 12 chucks. Whenever the table indexes, all the chucks rotate 180°. Four of the horizontal units can operate on one face of the work and the other four horizontal units on the opposite face; six vertical units on a central column work on the third face. The chucks rotate in a harmonic motion, starting and stopping slowly. The plates that carry



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SPEEDS UP

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✓ PUNCHING

✓ DRILLING

✓ BENDING

✓ TAPPING

✓ RIVETING



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GRIPPING FORCE 15 TIMES AIR LINE PRESSURE

Speedy Air Vise helps you do dozens of operations faster, better, cheaper—by air pressure! Foot control valve opens and shuts vise instantly, leaving both hands free to produce *more!* Jaw opens up to 3 inches, holds castings, parts, jigs, etc. Compact, trouble-free, inexpensive.

Complete with Foot Control Valve, Air Hose and Fittings . . . only **\$29.90**

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AIR REGULATOR

Precision - built.
Delivers pressures
up to 140 lbs. With
gauge. \$4.95
Less gauge,
\$3.10

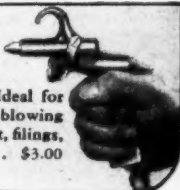


AIR FILTER

Keeps water
and particles
out of the
regulator and
pneumatic
tools. \$1.85

BLOW-GUN

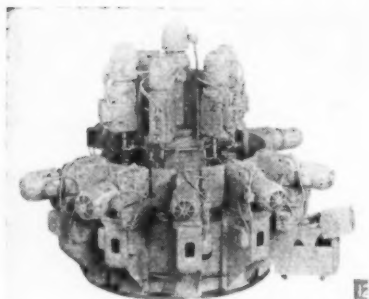
Looks and
operates
like a gun. Ideal for
cleaning and blowing
out chips, dust, filings,
scraps, etc. . . \$3.00



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275



tool guide bushings pilot onto the fixture to locate the operations to close tolerances. The work-holding chucks are of the 2-jaw self-centering type. A small compressed air motor near the operator rotates a screw on the chucks to open and close them quickly.



**Wrigraph
PRECISION
DRAFTING MACHINE**

Model J illustrated, with 10"x12" preswired board, bronze bearings, calibrated parallel device, graduated drawing attachment. For desk use-letter size drawings. Price complete \$5.50.

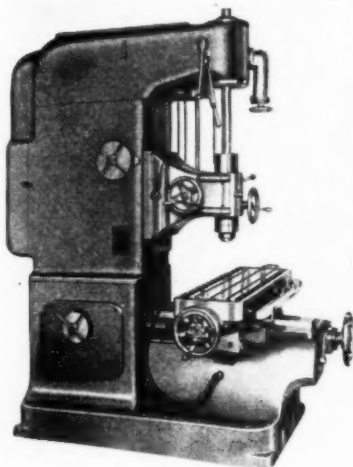
Write for literature and price on larger models

L. C. WRIGHT, INC.
P.O. BOX 63A Cleveland 21, Ohio

**W. B. KNIGHT MACHINERY CO.
ST. LOUIS 8, MO.**

BOOTH NO. 151

Knight No. 50 Milling Machine

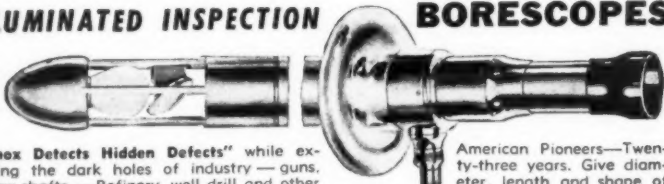


This new machine is an entirely new development of the manufacturer. It is a solid base type machine for vertical milling and precision boring, and features unusual capacity, rigidity, and accuracy.

Also to be shown:

**Knight Elec-Tro-Mill
Knight Rotary Table
Knight No. 40 Miller**

ILLUMINATED INSPECTION



"Lenox Detects Hidden Defects" while exploring the dark holes of industry — guns, hollow shafts — Refinery, well drill and other tubing, irregular dark spaces.

American Pioneers—Twenty-three years. Give diameter, length and shape of cavity.

LENOX INSTRUMENT COMPANY

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PHILADELPHIA 3, PA.**

HEIM



ROLLER BEARING
PILLOW BLOCK

IT'S NEW
LOW COST
EFFICIENT



RUGGED
SIMPLE
UNITIZED

This new Heim Roller Bearing Pillow Block provides a low cost, highly efficient means of supporting any revolving shaft. It represents the application of a rugged base and metal strap to the well known Heim Flanged Type Self Contained Roller Bearing to make a Pillow Block of extreme simplicity. Stock sizes for shaft diameters up to one inch.

Unibal Spherical Bearings

The rollers are kept dust free by the flanged construction of the outer casing and the inner roller race, which also retains the lubrication. Full length rollers provide maximum load carrying capacity. May be mounted upright, vertically, horizontally, or at any angle. Please write for bulletin of complete data with specifications and list of stock sizes.

Rod Ends . . . Die Polishing machines

THE HEIM
FAIRFIELD



COMPANY
CONNECTICUT

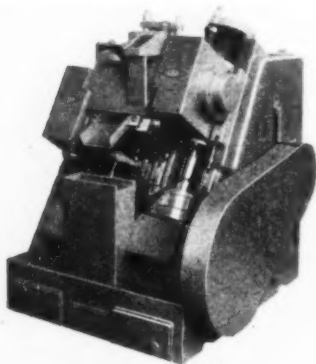
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LANDIS MACHINE CO.

WAYNESBORO, PA.

BOOTH NO. 101

Landis Thread Rolling Machine



This machine provides facilities for rolling screw threads, knurling, marking, and similar operations on cylindrical parts. A new principle in the design of the unit permits the rolling of screw threads on one, two or more diameters of a work piece in a single pass through the machine. Designed for the thread rolling of studs having fine pitch threads on one end and coarse pitch threads on the opposite end, the machine can also roll the threads on two different major diameters of stepped or shouldered studs in one operation. Socket head cap screws can be thread rolled and the knurling of the head completed at the same time.

Also to be shown:

Landis Centerless Thread Grinder

Four-Spindle Semi-Automatic Threading Machine

Single Head Threading Machine

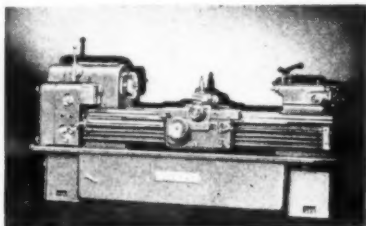
THE R. K. LEBLOND MACHINE TOOL CO.
CINCINNATI 8, OHIO

BOOTH NO. 507

Model RT Heavy Duty Lathe

This completely new machine, equipped with single lever control head, offers 16 spindle speeds, several of which are in the

carbide range. Speeds range from 20 to 1025 RPM, or 30 to 1537 RPM, and are all shifted by a single lever fitted with a guiding arrow adjusted to a direct reading plate. The operator's work is lightened by a universal power traverse which moves carriage, cross slide, and tail-stock electrically. A single lever on the apron controls all movements of the carriage and cross slide, and a plunger on the carriage picks up the tailstock and moves it in either direction.



Also to be shown:

25" Heavy Duty Engine Lathe

40" and 50" Heavy Duty Engine Lathes
Dual Drive Lathes

LINK-BELT COMPANY
CHICAGO 1, ILLINOIS

BOOTH NO. 652

Power Transmission Equipment

The Link-Belt Electrofluid Drive will be shown in its various phases: as a plain unit with a silent chain drive take-off. This is an operating unit, and the housing, chain casing, and bearing housings are made of transparent plastic; with built-in gear reduction, connected to a roller chain drive. This also is an operating unit, with similar plastic parts to the above. The unit is also displayed as a vertical unit connected to a horizontal roller chain drive; also an operating unit, with housing and chain casing in plastic. A skeleton of the Electrofluid Drive unit adaptable as an in-built part of a machine tool is displayed.

Also to be shown:

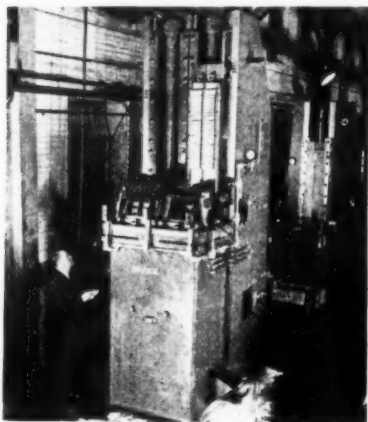
Link-Belt P. I. V. Gear

Motorized Speed Reducer

Link-Belt Roller Chains and Drives

**THE LAPOINTE MACHINE TOOL CO.
HUDSON, MASS.
BOOTH NO. 642**

**Single Ram Vertical Hydraulic Surface
Broaching Machine**



The unit illustrated is a Model SRV, 15 ton, 66" stroke single ram vertical type machine, one of six various designs which will be displayed by the manufacturer. For demonstration purposes, the machines are tooled to produce various contours, grooves, slots, and holes in a wide variety of parts, such as lock cylinder barrels, wrench handles, rifle barrels, jet engine compressor wheels, and different sized clutch hubs.

Also to be shown:

**Double Ram Vertical Hydraulic Surface
Broaching Machine**

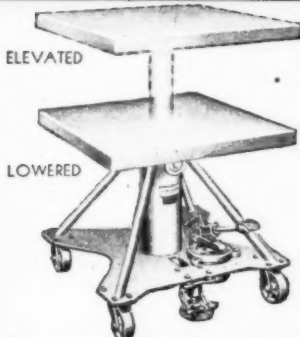
Horizontal Hydraulic Pull Broaching Machine

Vertical Hydraulic Pull Down Broaching Machine

Vertical Hydraulic Push Broaching Machine

**Vertical and Cross Travel Hydraulic
Broach and Tool Grinder**

The Answer to Many LIFTING problems...



LYON-Raymond PORTABLE HYDRAULIC ELEVATING TABLE

Worried about costs? Speed? Safety? Damage?—and other factors in handling materials? Then look into these many jobs this handy Lyon-Raymond Elevating Table is designed to do.

HERE ARE JUST 12 OF ITS USES:

1. Die handling
2. Sheet feeding
3. Adjustable section in conveyor system
4. Work table
5. Assembly bench
6. Positioning work to machine
7. Support for over-hanging work
8. Adjustable test bench
9. Transfer table
10. Positioning parts for attachment
11. Welding positions
12. Loading and unloading



We have prepared an illustrated bulletin full of suggestions that methods engineers will find most helpful. It's free! Write for your copy today!

LYON-Raymond CORPORATION

626 MADISON ST.

GREENE, N. Y.

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MAXIMUM?**

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Your inquiries for special tooling are solicited and will receive prompt efficient service. Let us help you solve your tooling problems.

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Andersons, Inc.

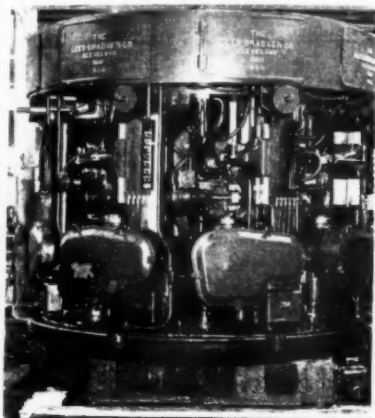


2333 NELSON ST., CHICAGO 18, ILL.

**LEES-BRADNER COMPANY
CLEVELAND, OHIO**

BOOTH NO. 111

Production Gear Hobbing Machine

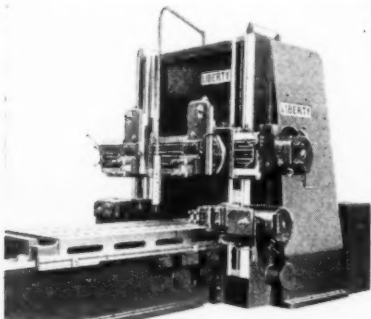


7-A production hobbing machines (the eight spindle rotary on display) are built in single, 4, 6 and 8-spindle rotary types; the spindles on the 4, 6 and 8 may be tooled for the same or for a different job. The tools feature push button control. The new lead differential head stock aids hobbing machines in handling qualified or registered helical gears and simplifies helical gearing calculations. New electric hob shifter locks hob spindle, shifts it a predetermined amount and clamps it before starting next cut. Electric counter, supplementing hob shifter, can be set for shifting from 1 to 400 cycles. Hob in-out mechanism brings the hob into depth at the start of the cut and clears it back out on completion of the hobbing operation.

Also to be shown:

Thread milling machines
Ultra-speed gear hobber

LIBERTY PLANERS, INC.
HAMILTON, OHIO
BOOTH NO. 415
Double Housing Planer



Special features and improvements include heavier bed and table sections for greater strength, larger and heavier rail

and side heads, with the side heads designed as independent units, each with their own motor drives and controls. A balanced geared table drive with constant feed table lubrication is included.

Deeper and more rigid sections have been given to column and cross rails, and power rapid traverse and feed in all directions on both rail and side heads. Motorized and automatic rail clamp, and automatic rail releveing are characteristic features, and the combination of push button pendant control and the selector levers which are duplicated at both ends of the rail, and on each rail head, give the operator full control at all times.

LOGANSPOUT MACHINE CO.
LOGANSPOUT, INDIANA
BOOTH NO. 113

Standard line of products will be on display—air cylinders, hydraulic cylinders, Howard chucks, rotating cylinders, air-draulic cylinders, presses, and air and hydraulic valves. New line of air valves will be featured.

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TRADE MARK REG. U. S. PAT. OFF.

ANTI-FRICTION COMPOUND

Solves Toughest Lubricating Problems



Packed in 5-10-25-50-100 lb. containers

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- Reduces Friction Drag
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- Prevents Metal to Metal Contact
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Widely Used in
 Largest Industrial
 Plants

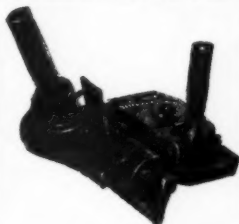
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FISHER BENDER



This sturdy, hand-power bender will bend up to:

- 1/2" square or round iron
- 2"x1 1/2" channel iron
- 2 1/4"x1 5/16" flat iron cold

Weight:
 40 lbs.

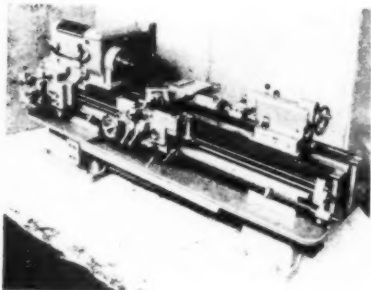
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Catalog No. 8 covering our line of benders, cutters, and punches available.

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**LODGE & SHIPLEY
CINCINNATI 25, OHIO
BOOTH NO. 312**

**Model "X" 16"x54" Centers Selective Head
Engine Lathe**



This machine is provided with direct reading diameter and direct reading attachments, and the new "pancake" flange motor drive. It features a 24-speed head-stock available in three ranges of spindle speeds, new bed and carriage ways, a totally enclosed quick change gear box with finger tip dial operation, automatic lubrication, and other outstanding characteristics.

Also to be shown:

- 2A Duomatic (Automatic) Lathe**
- Cross-Sliding Universal Turret Lathe**
- Other Model "X" type Engine Lathes**

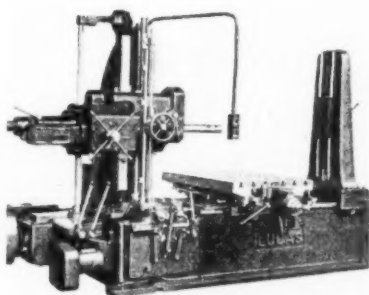
**LUCAS MACHINE TOOL CO.
CLEVELAND, OHIO
BOOTH NO. 39
Lucas 460 Electronic**

May be operated from any position by pendant control. All milling feeds in all directions and amounts are controlled and combined, where required, from the pendant. The distance between the two outside ways is 60". They are designed for accuracy on long table movements and are rigidly supported in a one-piece bed casting which also carries the two standard ways. The outer hardened steel ways support the saddle and are equipped with

hardened steel rollers.*

Also to be shown:

- Lucas 460 Electric**
- Lucas "41"**



*Illustrated is Lucas "41", 3" spindle horizontal boring, milling and drilling machine.

**THE LUFKIN RULE CO.
SAGINAW, MICHIGAN
BOOTH NO. 302-A**

Lufkin Precision and Machinists Tools


The wide variety of the Lufkin line of precision tools includes Micrometers, Calipers, Dividers, Combination and other Squares, Steel Scales, and Gages such as Center, Depth, Radius, Screw Pitch, Telescoping, Thickness, Planer, etc.

Also to be shown:

- Lufkin Measuring Tapes and Rules**

**MATCO TOOL COMPANY
CHICAGO 12, ILL.
BOOTH NO. 14-B
Universal Collet Head**

The universal dividing collet head for both grinding and milling features a sturdy graduated base, Torrington precision needle bearings, a hardened and ground spindle, and a 24-tooth hardened and ground index plate. The unit has felt seals for dust protection, and takes up to 1"



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BUCKEYE'S 1088 SIZES of fully finished ready-use bearings,—156 sizes of semi-finished cored bars turned on the OD only, and 256 sizes of rough bars are regularly stocked in the leading industrial markets for your convenience.

Manufactured from selected materials under Buckeye's rigid controls, these bearings measure fully to Buckeye's exacting specifications. Each a quality product, free from porosity, and accurately dimensioned, assuring speedy, easy assembly and long efficient service. Send for the Buckeye catalog and order Buckeye Bearings by name from the Buckeye distributors.

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 CROSS BROS. CO., INC. • New York, N. Y.
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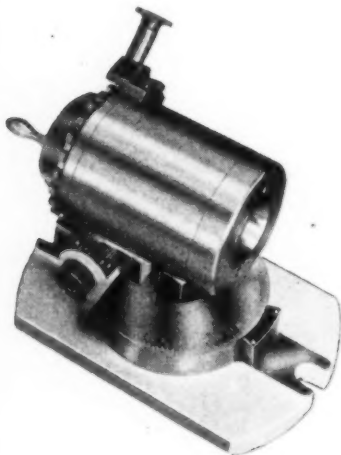
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IN ANY RECOGNIZED BEARING METAL ANALYSIS

capacity in ground thread collets. Applications include angle, flat, and hexagon milling and grinding; with attachments the unit can do collet grinding on external grinders, sharpen plain mills, side mills, and end teeth on end mills, as well as for diamond dressing radii and angles on grinding wheels.



Also to be shown:

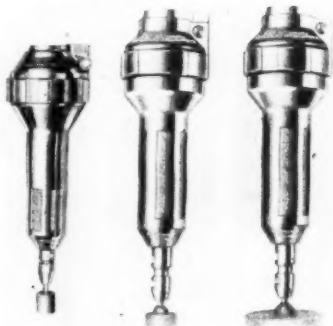
All-Angle Vise
Swivel Milling Vise
Universal Drill Jig and Angle Plate
Radius and Angle Wheel Dresser

MADISON-KIPP CORP.

MADISON 4. WIS.

BOOTH NO. 450

Kipp Air Grinders



The Kipp Featherweight Air Grinders are now manufactured of aluminum and magnesium for lightness, are supplied with large spindles for stability and low air consumption, and have controlled speeds for extended life. The illustrated models are specified for various types of work: Model TT, in the center cut, is small enough for grinding in die cavities, yet large enough for production work that is too heavy for the model JA to its left. A speed of 30,000 RPM is ideal for the larger wheels especially developed for the intermediate size grinder.

Also to be shown:

Madison-Kipp Lubricators
Pneumatic Air-Tool Accessories

'STAR DUST'

**LABORATORY GRADED
PURE DIAMOND POWDERS**

For GAUGES, TOOLS, DIES, etc., with tremendous **TIME SAVING**. These factors make **STAR DUST** indispensable in lapping and superfinishing on **HARDSTEELS, TUNGSTEN CARBIDE, CHROME**.

- Absolute control of particle sizes
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- **STAR DUST** sizes as fine as .0001"
- Complete range of grit sizes

There is a **STAR DUST** Field Serviceman in your territory.

ACE ABRASIVE LABORATORIES

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STAR DUST speeds up production enormously and produces finishes and superfinishes down to less than .0000004 of an inch.

**Precision LAPPING
POWDERS for
PRECISION work**





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EVERYWHERE ARE *Invited*
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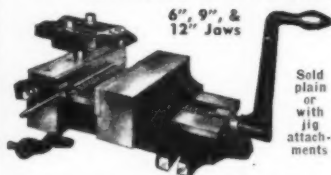
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**PRODUCTION &
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SEPT. 17-26, 1947

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THE PRODUCTION & MACHINE TOOL SHOW
GRAFTON, WISCONSIN

A versatile vise for modern machines

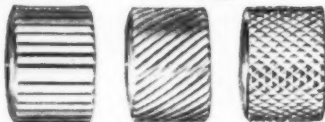


An accurately made vise for repeat operation positioning

The Graham Multi-purpose Vise makes your modern machines more versatile, putting a ready-made jig or fixture on drill press, radial, miller, shaper, planer, grinder. Sizes up to 150 lbs.

"Adjust-angle" KNURL HOLDER

Many
patterns
using
only
straight
knurls



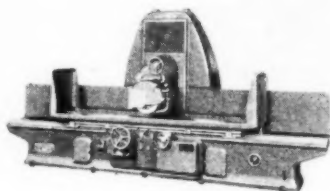
By graduated adjustment of angle, straight knurls produce many varieties of straight, spiral and checkered patterns on work up to 2 1/4" dia. For turret or tailstock. Also made in Passing-over-stock design.

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Bulletin 41**
giving full details
of applications
and prices.



Graham Mfg. Co.
52 Bridge St., East Greenwich, R. I.

MATTISON MACHINE WORKS
ROCKFORD, ILL.
BOOTH NO. 46
Mattison Precision Surface Grinders



The Mattison high-powered precision Surface Grinder with Hydraulic Feed incorporates the ruggedness required for the rapid heavy-duty removal of metal, combined with the precision necessary to produce close limit accuracy. The machine's capacity enables it to handle large size castings up to five tons and grind surfaces previously hand scraped. V-type and flat ways, as well as contour work, can be ground by a wheel that has been dressed to an angle or radius. Shoulder and edge work can be ground because of wheel clearance and spindle construction.

Also to be shown:

Mattison Wide Belt Sheet Grinding and Polishing Machine.

MC GILL MANUFACTURING CO.
VALPARAISO, IND.

BOOTH NO. 549

Cam Yoke Roller Bearings

Cam Yoke Roller Bearings were designed to increase the adaptability of Multirol Cam Follower applications where mounting of the roller unit on a shaft rather than by the conventional stud is desirable. Shaft sizes begin at .250" for the CYR 3/4, and include a bore diameter of 1.25" for CYR 4, the largest standard stock size.

Cam Yoke Roller design lends itself to guide and support roller applications which require extra heavy outer race sections for shock load resistance. Internal construction of the CYR is similar to the CF bearing, having a full complement of small diameter rounded end rollers. Their full

The Prutton... TAPMASTER



3
TAPPING MACHINES IN

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Speedy: can do three jobs at once, tapping any size hole up to $\frac{1}{8}$ ". Three separate motors. Single or continuous cycle. Positive feed by husky lead screw prevents tearing of threads. Safe—no jamming of work. Ample tanks for coolant oil—ready accessibility. Descriptive bulletin. $\frac{3}{4}$ " awning eye-end and $\frac{3}{4}$ " pipe cap: 1500 per hour on Tapmaster.

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MOREY AUTOMATIC LATHES

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Maximum output with minimum effort
Takes full advantage of tungsten carbide tools

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for precision manufacturing 10"-14" stroke

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usable length provides maximum load carrying capacity which, with sturdy roller end plates permanently secured to inner ring shoulders, guarantees a bearing unit capable of rugged service. A complete range of standard sizes and applications will be shown.

MICHIGAN TOOL CO.

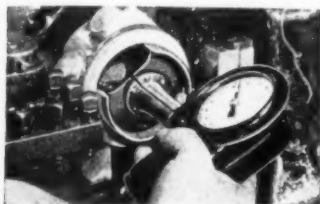
DETROIT 12, MICH.

BOOTH NO. 426

No. 870-A Underpass Gear Finisher

This unit will select at will either Underpass shaving of gears, in which the work moves tangential to the cutter; Transverse shaving, in which the work is reciprocated axially, while the feed is radial; Traverse shaving, a new development representing a combination of Underpass and Traverse shaving. To select any of the three methods, it is necessary to rotate the slide for the work carrying head into the proper position.

Features of the machine include a quick acting cam lock tailstock, allowing faster loading and unloading; location of the



Comtorplug in use on turret lathe.

Modern machine tools have NOT outrun ALL shop gages! Although solid plugs are inadequate, the patented expanding, internal gage known as "Comtorplug" puts positive, precise gaging in the hands of your machine operators and bench inspectors. Made in sizes to gage holes from 1/8" to 8" dia. Shows exact size (not a passing reading), detects out-of-round, front or back taper, bell mouth, etc., to fractions of .0001". Automatic accuracy, free of human variations. Gages without removing work from chuck. In use at machines in hundreds of plants—"shop ruggedness with laboratory accuracy." Your new machines can produce the top accuracy of which they are capable, only if your operators have gaging precision comparable to the machine's precision. "Comtorplug" is the answer—see it and you'll see why.

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MACHINE and TOOL BLUE BOOK

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COMTORPLUG

used for bench inspection and AT or IN the machine

Gages holes 1/8" to 8" dia. to fractions of .0001"

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EXPANDING
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COMTOR SURFACE SMOOTH-
NESS COMPARETOR:
Bulletin 32A

September, 1947

**This HY-PRO
Ground Thread Tap
will save money and
boost production**

When tapping at high speeds, this ground thread tap will usually produce at least 6 times as many threaded holes as a cut thread tap... with less power, less sharpening, less breakage.

A
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of machine
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Prompt delivery.
Many special as well
as standard taps in stock.

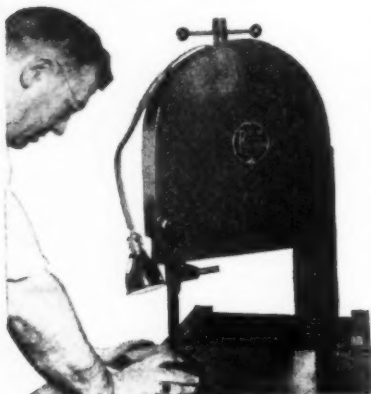
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Many Machine Tool Manufacturers Install VIMCOLIGHTS ON THEIR MACHINES



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- Ball swivel joint with easily adjusted FLEXIBLE ARM
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TWO STANDARD TYPES for side mounting

No. A-15-7-50 15"
flexible arm with
side entrance socket.

No. A-15-5-50 15"
flexible arm with
top entrance socket.



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BUFFALO 13, N. Y.

work above the cutter in all cases, simplifying loading.

Also to be shown:

Fan-Cooled Cone Drive Speed Reducers
No. 870 Gear Finisher

MICROMATIC HONE CORP.
DETROIT, MICH.

Microhoning Machines

Model number 705-2 is a double spindle machine tooled and fixtured for multiple or progressive microhoning gear blanks in the green. This machine is being used in the gear manufacturing industry to develop a straight and round bore in the blank. The blank is then mounted on an arbor and the teeth are generated from the bore. After heat treat, the bore is again microhoned to correct any distortion. This is a radical departure from standard processing technique which improves quality of the gear and increases production. Machine is entirely automatic and will maintain a .0003" tolerance on bore to bore size.

MORTON MANUFACTURING CO.
MUSKEGON HEIGHTS, MICH.

BOOTH NO. 120

Keyway Cutter and Slotting Machine

Machine is hydraulically driven, and made in 18" and 24" stroke sizes. The top plate carries six machined "T" slots and forms a surface for securing the rapid binding attachment. Top plate is stationary and the necessary taper is secured through tilting the cutter bar. Automatic feeds provide variable rate of incremental feed from .001 to .020 per stroke. Automatic relief to the cutter bar on return stroke is provided. Operating height from table to floor approximates 40". Cutting speed range is 10 to 25 feet per minute with a return speed of 75 feet per minute. Floor space required is about 3' wide x 8' long. Machine is regularly equipped with rapid binding attachment, auxiliary top plate, adjustable centering jaws and special heavy duty upper bar backing support and post.

Also to be shown:

Morton High Duty Cut Light Type Flash
Trimming Machine.

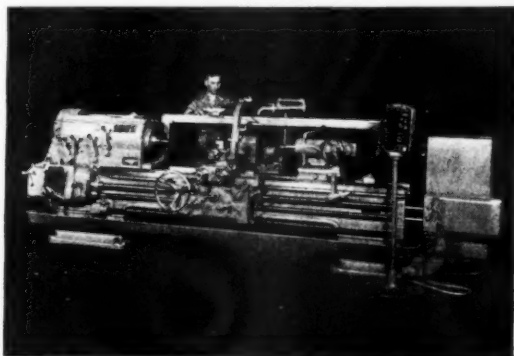
**THE MONARCH MACHINE TOOL CO.
SIDNEY, OHIO**

BOOTH NO. 208

Monarch Automatic Sizing Unit

This device enables a standard engine or tool-maker's lathe to be converted from manual to automatic operation for work such as shaft turning, boring, facing, and contour turning. It will be available for 14" and larger Monarch lathes. The addition of the sizing controls does not interfere with the normal functioning of the lathe, nor does it eliminate any of the features of the machine. Chief advantage of the unit is the time saving. On shoulders, the tool rapid traverses out (100" per min.) to a stop to within any predetermined distance from the O.D. of the next

diameter. Feed for this diameter starts automatically at the predetermined feed rate. A minimum of time is required for the tool to move out into position for the next largest diameter. Operation is so



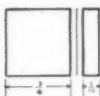
sensitive that the machine will respond to a diameter change of as little as .001".

CARBIDE USERS

HERE'S A MATTER OF DOLLARS AND SENSE

THE FIGURES (For 12 Tools)

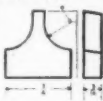
USING A STANDARD BLANK



Style 21340 blank	\$.95
Grinding time 2 hours	10.00
Preformed shank, brazing	2.75
Total	\$13.70

ADAMAS PREFORMED TIP

Blank to specifications	\$2.22
Grinding time 1 hour	5.00
Preformed shank, brazing	2.75
Total	\$9.97



THE FACTS:

A large machine tool manufacturer made most of his special carbide tools from standard blanks. He found that a special blank, at a slight additional cost could be obtained preformed to his requirements within one week. Instead of hogging the rough shape in hard tungsten carbide, he had only .015 to .020 to grind.

The Final Result: A saving of \$44.76 on 12 tools was made—these tools with standard tips would cost 37.4% more. Equally important—greater cutting tool life with an Adamas job engineered grade.

ADAMAS Preformed Blank Deliveries Are Averaging Under One Week!

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"Aids to Carbide Users"
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CARBIDE CORPORATION

40-30 23rd STREET, LONG ISLAND CITY, NEW YORK

Producers of top quality carbide for cutting tools, dies and wear resistance—both standard and special.

**THE NATIONAL ACME COMPANY
CLEVELAND 8, OHIO**

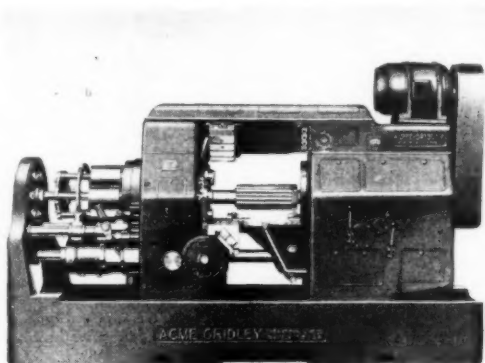
BOOTH 628

**Model RB Acme-Gridley
Bar Automatic**

Design improvements in these new Acme-Gridley Automatics are geared to trade requirements to achieve higher output per hour, greater precision in the work, and improved operating convenience, resulting in lowering the unit cost of work produced.

The new 1 1/4" RB Multiple Spindle Machine offers advanced design and such construction points as a box type rigid frame, and heavier machine construction, with the weight evenly distributed throughout to resist vibration imposed by stronger

tools operating at faster feeds and higher spindle speeds. Broader use of attachments include operations on the automatic that were formerly done on secondary equipment. New operating conveniences have



**REICH 3-WAY
PRECISION TEST INDICATOR**

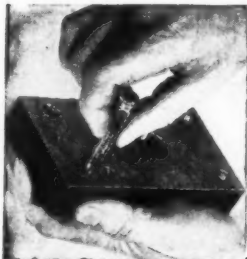
Lifetime conical bearings, stainless and non-magnetic. Sturdy construction, no returning for adjustment or service. .014" reading. Price \$6.50. Write for folder.

J. R. Reich Manufacturing Co.
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been incorporated such as increased area of the tooling zone, reducing machine set-up and changeover time, interchangeable speed and feed gears, automatic chip conveyor disposal. Automatic devices for visual control and other refinements have been added, simplifying the operator's job, saving time, and increasing the safety of the machine and the operator.

Also to be shown:

Chronolog Control System
Single Spindle Chucking Machines
Adjustable Blade Chasers



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It's a help that die makers, tool makers, machinery builders and general machinists have long sought—a more accurate and surprisingly faster way of transferring blind screw holes.



The Heimann Transfer Screw Set is a self-contained, complete tool. No wrenches or pliers are necessary. Made in 3/16" to 1" diameters. Send for pricelist.

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For over 60 years, manufacturers with chucking problems have been calling on Skinner. Whether you have any chucking problems or not, we cordially invite you to call on us at Booth No. 638 at the Machine Tool Show. Here you will see the complete line of Skinner quality chucking equipment.

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341 CHURCH STREET, NEW BRITAIN, CONN.

**Skinner
Chucks**



4-Jaw Independent Chucks especially designed for heavy precision work on engine, toolroom and turret lathes. *3-Jaw Self-Centering Scroll Chucks* for heavy roughing and accurate finishing cuts on repetitive work. *Combination Geared Scroll Chucks* for versatility and speed in producing odd-shaped pieces. *Power Chucks* and an actual set-up showing the superior gripping power and safety of the Skinner "wedge" design. *Air Cylinders*, both stationary and revolving, for minimizing operator fatigue and production costs. (Also a complete line of power chucking equipment.) *Machine Vises* for milling, shaping, drilling, etc., in a wide range of sizes and styles.

*Also at many other booths where machine tool builders have chosen Skinner chucks for use on machines they are exhibiting.

HAND & POWER OPERATED MACHINE CHUCKS - AIR CHUCK EQUIPMENT - FACE PLATE JAWS - MACHINE VISES
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**Koenig
Vernier
Depth Gauge**

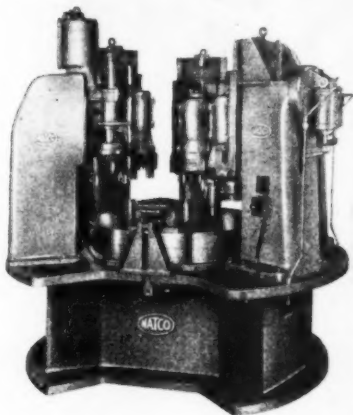
... quickly and accurately measures distance of projections from plane surfaces, depth of holes, etc. End slot of head makes it possible to get otherwise difficult measurements.

Solid head is $\frac{3}{8}$ " x $\frac{7}{8}$ " x $3\frac{3}{4}$ " hardened, ground and lapped. Scales are $\frac{3}{32}$ " x $\frac{1}{4}$ " with end hardened.

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William A. Koenig
132 Ferry St. Troy, N. Y.

NATIONAL AUTOMATIC TOOL CO.
RICHMOND, INDIANA
BOOTH NO. 4
Model A-65 Cam Feed Machine



This machine was developed to increase production where mass manufacture of small parts had to be stepped up to meet increased operating costs. The units are readily made up into special station type machines for the mass production of small parts; each unit, including the head, occupies a "pie-shape" which makes them easy to fit together around the table.

Also to be shown:

Natco A-20 Borface
Natco A-33 Light Sensitive Multi-Spindle
Tapper and Driller
Natco E9HU Deep Hole Driller

TOSCO WAY CURTAINS FOR MACHINE TOOL BEDS



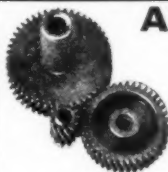
Protects ways on Planers, Mills, Grinders, Boring Mills, etc. — Keeps chips and abrasive dirt out of ways — Prolongs life of machine — saves costly repairs and overhaul time.

Rollers constructed of seamless steel tubing with special long life springs. Curtain is of rubberized material impervious to oil and cutting compounds.

3 Standard sizes
Special sizes to order

Installed easily with single brackets.

TOOL SUPPLY CO.
40 Custer Detroit 2, Mich.

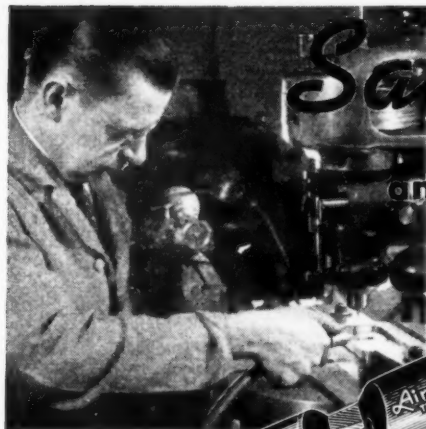


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Send samples or blueprints for quotation.

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TIME**



Precision made of bar
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Complete Air Hose Assembly.
Consists of Air-O-chek Air Gun
and standard pipe fitting fer-
ruled to the hose. Convenient
and economical. Shipped ready
to install.

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**Air-O-chek
Air Guns**

**No Leaks — No Levers
No Packing Glands**

In machine shops, foundries and factories all over America AIR-O-CHEK Air Guns are saving air, saving time and saving maintenance. They are leakproof and trouble free because they have no packing glands. The ball and socket joint between valve and internal lever gives leverage for full discharge with a slight flex of the hose. Shut-off is instant and positive.

Install a dozen and see why so many plants have switched to AIR-O-CHEK. Catalog on request.

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**NEW BRITAIN-GRIDLEY MACHINE DIV.
THE NEW BRITAIN MACHINE CO.
NEW BRITAIN, CONN.**

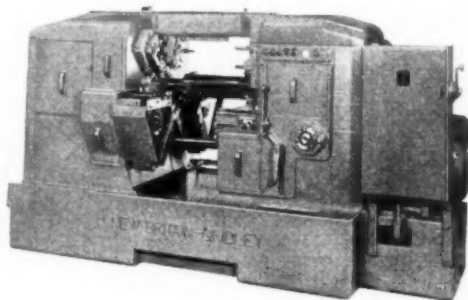
BOOTH NO. 311

Multiple Spindle Automatic Screw Machines

Six independently cammed cross slides are radially arranged about the axis of the spindle carrier, making possible the same line of forming thrust for every position, minimizing overhang, and allowing interchangeability of holders among the five heavy-duty forming positions. These machines are designed to take full advantage of carbide cutting tools, and the whole design incorporates the necessary rigidity for the full utilization of carbide cutting. Other advantages such as automatic electric stops, spindle carrier lift-

ing mechanism, automatic locating and locking of the carrier, spherical roller collet operating mechanism, and auxiliary camming are also included.

A change in set-up does not require a change in stops, high points, drawback points, nor a change in the total stroke,



since all remain constant.

Also to be shown:

Automatic Turret Lathes
Double End Chucking Machine
Contour Boring and Turning Machines

**THE NORTON COMPANY
WORCESTER, MASS.**

BOOTH NO. 5

Cutter and Tool Grinder

The wheel head can be tilted up to 15° each side of the horizontal, or swiveled

*Greater Speed
and Accuracy in*

**KEYWAY
CUTTING
WITH THE**

GLENNY
Adjustable
Expansion
Push
BROACH

Dept. AA

East Shore Mach. Prod. Co.

835 East 140th Street - Cleveland 10, Ohio, U.S.A.



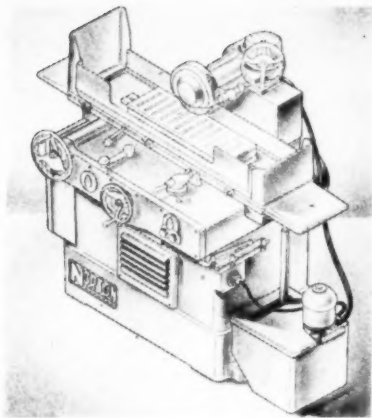
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**VARIABLE SPEED
TRANSMISSION**

For "A" section V-belts—3.3—1 speed range—perfect belt alignment in all positions. Priced so low that no shop or machine need go without infinite speed selection. **\$16.50** (3 Types—8 sizes to choose from)

Standard Transmission Equipment Co.
3409 VERDUGO ROAD
LOS ANGELES, CALIF.



through 360°. Reamers may be mounted on centers with the blade set at center-line and sharpened to the exact clearance angle without use of a clearance angle attachment. Form tool angles, both clearance and cutting, are ground easily without multiple set-ups and without changing the wheel from one end of the spindle to the other. The wheel head is clamped by quick-acting, built-in levers located directly beneath the wheel head elevating hand wheel.

Also to be shown:

- Surface Finishing Machine
- Cylindrical Grinders
- Lapping Machine
- Surface Grinder
- Contour Grinder
- Universal Grinding Machine

NEW DEPARTURE
DIV. GENERAL MOTORS CORP.
BRISTOL, CONNECTICUT

BOOTH NO. 604

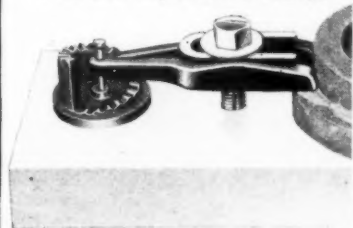
Ball Bearings

The display will consist principally of examples of the various types of ball bearings used in the majority of the new machine tools being exhibited. These bear-



ings are in most cases made with the most extreme accuracy tolerances, and are capable of very high speeds as well as continuously rigid support of machine parts. Since these bearings have been chosen to locate many of the most vital parts of the new machines, their use in such quantities is evidence of their importance to faster, better production and lower maintenance requirements.

Reduce Set-Up Time
Speed Production
With K-O Adjustable U-Clamps



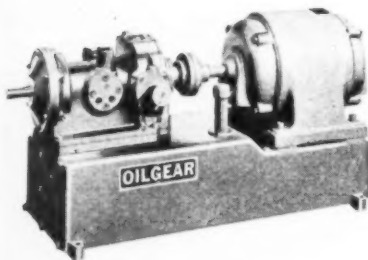
No. 4 U-Clamp with 3/4" bolt—\$1.60

Turning step-elevation base quickly adjusts clamp to work height. Three-point contact assures uniform pressure, strong grip. Made in six sizes—three styles.

Write today for circular and prices.

K-O PRODUCTS CO.
Benton Harbor, Michigan

THE OILGEAR COMPANY
MILWAUKEE 4, WIS.
BOOTH NO. 440
Fluid Power Transmissions



These units consist of a volumetric variable delivery, radial rolling piston pump driving a constant displacement rolling piston motor. Oil, as the fluid power, flows from unit to unit through adequately proportioned passages, providing automatic

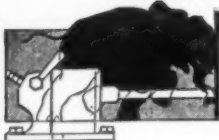
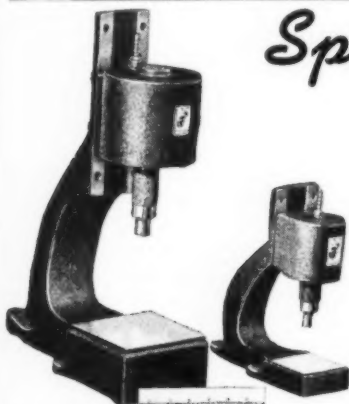
forced and flood lubrication, and insuring long life. A compact case encloses the operating mechanism, while integral relief valves protect the installation against overload. The oil reservoir can be integral with the machine, or a separate reservoir base may be attached to the transmission case for remote mounting.

OLIVER INSTRUMENT COMPANY
ADRIAN, MICH.
BOOTH NO. 435
Precision Tool Bit Grinder

Tool is ground on the face of a 10" x 1½" steel back grinding wheel. Tool is held in a fixture while being ground and the movement of the fixture is manual, but guided by a template during the grinding operation. Tools ground up to 1" wide by 1¾" high and from 0 to 20 degrees clearance.

Also to be shown:

Drill Grinders
Drill Point Thinning Machine
Hydraulic Automatic Face Mill Grinder
Arc Face Mill Grinder
Die Making Machine



Speed Up Work *with* **MEAD** **AIR PRESS**

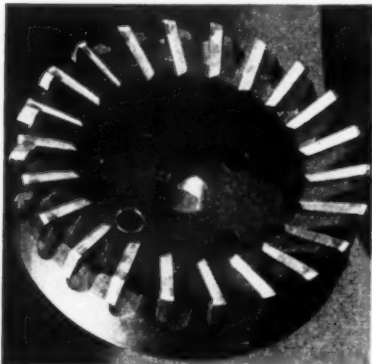
These new Mead Air Presses deliver 400 and 1200 lbs. pressure respectively on 100 PSI. Handle many staking, crimping, assembly, and similar operations. Clearance 4" and 7½" respectively. With foot control these presses will speed up countless bench jobs, save muscular effort. Write for new Air Power Catalog—just off the press.

MEAD SPECIALTIES CO.
 4114 NORTH KNOX AVENUE • DEPT. YA-97 • CHICAGO 41, ILL.

O. K. TOOL CO., INC.
SHELTON, CONN.

BOOTH NO. 650

Carbide Tipped Dual Adjustable Face Milling Cutter



Carbide tips are positioned for maximum use of the carbide. Negative axial and radial rakes are supplied for machining steels and positive axial and radial rakes are supplied for machining cast iron and non-ferrous material. Stock cutters are made with National Standard Drive.

Also to be shown:

Milling cutters
Reamers
Boring Heads
Lathe
Planer and shaper tools

O'NEIL-IRWIN MANUFACTURING CO.
LAKE CITY, MINN.

BOOTH NO. 13-A

Di-Acro Notching Shear

This flexible precision unit will rapidly and accurately make angular cuts in sheet materials, eliminating dies for this specialized application; it allows a 90° notch of any size within its capacity to be accurately cut with a single operation from either the corner or other positions along the edges of a sheet of material. Angles both smaller and larger than 90° may be

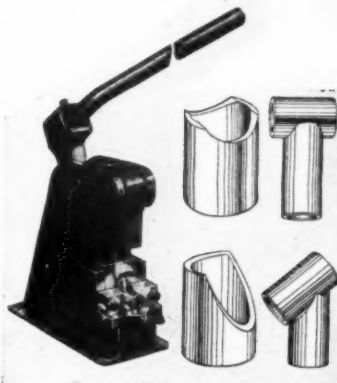
NOTCHING TUBING OR PIPE ENDS EASILY WITH

ARC-FIT

Arc-Fit is a notching unit for preparing pipe or tubing ends in making welded or brazed tubular joints. Arc-Fit will prepare the ends of a pipe or tube in less than 5 seconds. Arc-Fit is a production tool that will cut your production costs. It is applicable in any industry where pipe or tubular construction is used.

- Arc-Fit can be utilized in any power press.
- Arc-Fit can be furnished for any size tubing or pipe.
- A hand press can be supplied with Arc-Fit units for shearing pipe or tubing sizes 2 inches or under.
- Arc-Fit does not deform pipe or tube. No grinding or finishing operation is needed.
- Engineers can now design for tubular construction and cut costs.

Write today for circular and prices.



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2527 Moffat Street Chicago 47, Illinois



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ELECTRIC SANDER**



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ON MACHINE BASES
... etc.**

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Requires no skill. Finishes CURVED or flat, WET or dry surfaces 3 to 4 times as fast as by hand. A light weight, rugged, durable tool.

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**DETROIT
SURFACING MACHINE CO.**

7432 W. Davison Ave., Detroit 4, Mich.

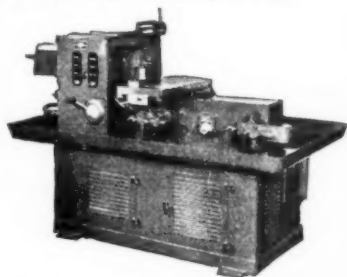
sheared. The action of the Di-Acro Notching Shear is obtained through a roller bearing cam arrangement which evenly distributes the shearing pressure simultaneously on both shearing blades.

A clean cut free from rough edges or burrs even in heavy materials within its capacity is possible because of the precision construction of the Notching Shear itself and its triangular shaped ram. The 90° pitch of the shear blade provides true shear cutting of materials with the pitch of the blade advancing progressively through the material with a minimum of contact at the point of material separation, assuring an easily operated unit and a high maintained rate of production.

Also to be shown:

Di-Acro Bender
Di-Acro Rod Parter
Di-Acro Precision Brake

**OSTER MANUFACTURING CO.
CLEVELAND 3, OHIO
BOOTH NO. 634
Rapiduction Automatic Cycle Lathe**



This machine is for forming, facing, and other cross feed operations. Its capacity with a standard collet is 1½". The swing over cross slide is 8". Features of the unit include a hydraulically operated cross slide, solenoid controlled valves and other control devices provide an automatic cycle of fast approach, feed, dwell, fast retraction, and stop. The automatic cycle of cross slide operations can be arranged for feed in one direction only, or in two directions, as required. In set-up, manual control is provided.

Also to be shown:

Rapiduction Turret Lathe
Pipe and Bolt Threading Machines

TOPS in TAPPING

PERFORMANCE

Jarvis-Dowding

TAPS AND DIES

*Here's the solution
to your tapping problems*

For maximum performance under tapping conditions prevailing in your shop, make your next tap order read "Jarvis-Dowding" ...custom finished taps, designed to meet your demands. "Jarvis-Dowding" Taps cut more threads with less power, require minimum sharpening, and provide greater dependability on the job. A special hardening process under laboratory control adds a toughness that means longer life. Try "Jarvis-Dowding" Taps and see, feel, and figure the difference."

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Jarvis POWER TOOLS

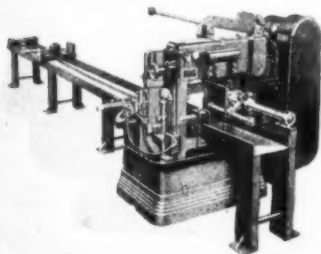
THE CHARLES L. JARVIS CO., MIDDLETOWN IN CONNECTICUT

Rotary Files • Flexible Shaft Machines • Taps and Dies
Tapping Attachments • Quick Change Collets and Chucks

**PEERLESS MACHINE COMPANPY
RACINE, WISCONSIN**

BOOTH NO. 144

Peerless Power Saws



Peerless Mechani-Cut Power Saws for cutting metals automatically, have been further developed to include the 7"x7" unit, with mechanical pull-up. This model is equipped as standard, with an automatic length gauge for gaging lengths 1/8" to 48". The metal is fed forward through a 4-sided saw frame which surrounds the metal to be cut, instead of straddling over the work. In order to permit maximum pressure on the saw blade without shortening the blade life unduly, a unique backing plate is provided to back up the blade.

Also to be shown:

11"x11" Peerless Power Saw without Conveyor

Peerless Saw Blade Grinder

**PHYSICISTS RESEARCH CO.
ANN ARBOR, MICH.**

BOOTH NO. 563

The Proficorder

This device is a mechanical-electronic shop instrument which provides a magnified chart record of the shape, height, and spacing of surface irregularities. It indicates the true profile of practically any machined or finished surface, and is highly flexible as to the amount of detail recorded, since it permits tracing widely varied surfaces at the same magnification for direct comparison of profiles. The

equipment is ruggedly constructed to withstand shop use, and the operation is quickly learned.



Also to be shown:

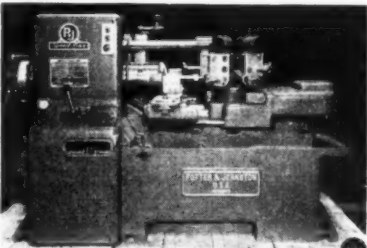
**Rotary Piloting Fixture
Anderometer
Race Tester**

**POTTER & JOHNSTON MACHINE
COMPANY**

PAWTUCKET, RHODE ISLAND

BOOTH NO. 43

Automatic Turret Lathe. 3U Speed-Flex



This small-size unit has been developed for machining castings and forgings up

to 6" in diameter. It weighs 5000 lbs. and is furnished with spindle speeds ranging from 73 to 1445 RPM, but dual speed ranges of 36 to 711 RPM and 73 to 1445 RPM can be provided. The swing over the cross-slide is 8¾", and the chuck is 8" in diameter. The cross-slide has a 2½" travel either way, and the turret-slide range is 6". Turret-slide and cross-slide feeds range from 0.0023 to 0.0684" or from 0.0042 to 0.125" per spindle revolution.

Adjustment of the spindle in the headstock provides for a variation of the minimum distance between the spindle nose and the various turret faces. Four automatic changes of spindle speed are obtainable with each set of hand pick-off gears, and three automatic changes of feed can be similarly secured.

Also to be shown:

Nine other models of Automatic Turret Lathes

**PIONEER PUMP AND
MANUFACTURING CO.
DETROIT 3, MICHIGAN**

BOOTH NO. 35-F

Pioneer Coolant Pumps



Illustrated is Model VA, one of the nearly 400 different models and capacities in

this company's line of coolant pumps. They are available in vertical and horizontal models and for outside or tank installation. Capacities range from 2.4 to 174 gallons per minute. All models feature heavy-duty, long-lasting, totally enclosed ball-bearing motors. Some models are specifically designed for functioning in shallow sumps.

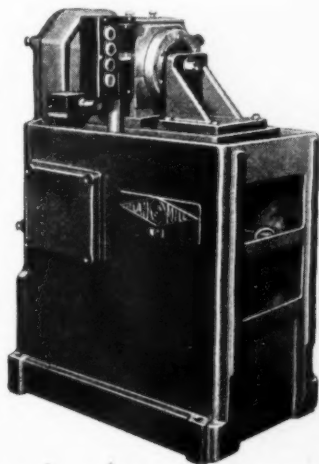
Also to be shown:

**Rollway Positive Displacement Pumps
for Lubricating Liquids**

**PLAN-O-MILL CORPORATION
HAZEL PARK, MICH.**

BOOTH NO. 408

No. 1 Planetary Milling Machine



This unit is designed especially for low-cost, high-volume thread and form milling. The machine is completely anti-friction, providing thread-milling accuracy, trouble-free operation, and simplicity of set-up. It incorporates push-button operation, the coordination of feeds and speeds, and Thy-mo-trol electronic feed control (engineered by General Electric) for extreme accuracy of control of feed-in and feed-around.

Also to be shown:

**Auxiliary Equipment for the No. 1
Planetary Milling Machine**

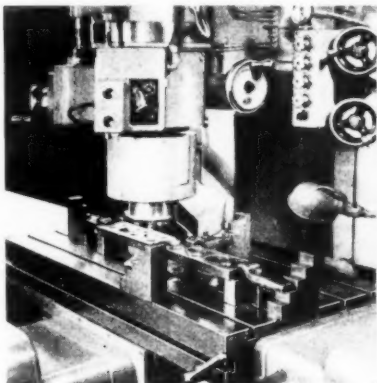
**PRATT & WHITNEY
DIV. NHES-BEMENT-POND CO.
WEST HARTFORD 1, CONN.
BOOTH NO. 55**

No. 2C Jig Grinder

In 1928, this Jig Grinder was conceived and designed as the first complete machine tool for grinding holes to jig borer spacing and precision grinding finish. It was designed as a companion machine to the P&W Jig Borer that had been in production since 1917. The 1928 machine was rightfully called a "Jig Grinder", and was quoted to customers under that name in 1929. Due first to depression conditions, and later to the sharply increased demands that preceded World War II, production of the P&W Jig Grinders was withheld until this year.

The 1947 Jig Grinder is a big advance over the original 1928 machine. Today it is all electric and fully developed. It is the equal of a Jig Borer for locating and spacing precision, plus its ability to remove stock rapidly, and finish grind holes to

precision limits. It has capacity to handle a wide size range of work with a table surface 22" x 44", a 36" longitudinal travel, and an 18" transverse travel.



The bed, table, and locating mechanisms are similar to a jig borer. The same measuring instruments are used for spacing: end measures, "tenths" inside micrometers and dial indicators to control measuring pressure and to give a visible check on spacing precision. All slides and measuring instruments are completely protected by hinged guards that swing up to provide easy access while setting.

Also to be shown:

**Kellerflex Flexible Shaft Machines
Keller machines
cutting tools**

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- HEAVY DUTY



MARVECO - guaranteed to outperform and outlast any other live center. Write for free catalog, "The Marvels of Marveco."

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Burr Finish Polish — in one operation!
Big time and work savers in conventional and special finishing. Bridge the work between grind and buff in one operation. Take up where grinding materials leave off. Made in wheels, tablets, sticks; finish metals, plastics, wood. Ask your dealer for catalog-manual and prices.

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Weldon Roberts Rubber Co., Newark 7, N. J.



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HARDWARE HAND TOOLS ELECTRIC TOOLS

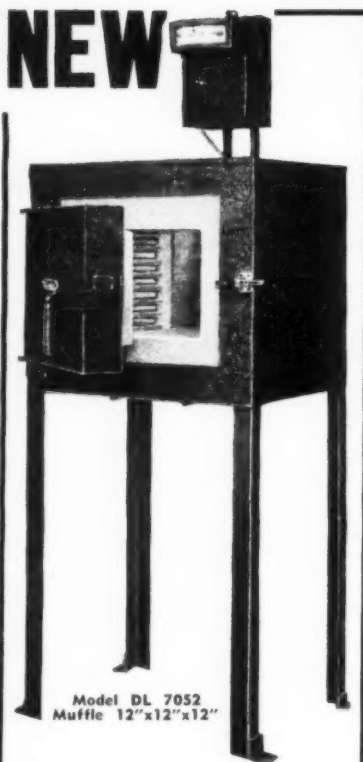
● The complete line of Stanley Electric Tools includes Electric Drills in all sizes to meet the requirements of industry.

A nearby Stanley Distributor will supply the right tool for the job.

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Price only \$425**

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GILBERT S. SIMONSKI MFG.

401 N. Broad St., Philadelphia 8, Pa.

**PRECISE PRODUCTS CO.
RACINE, WIS.**

BOOTH NO. 37-C

Precise 40 Portable Electric Handtool



This accessory is a new, lightweight electric handtool and portable grinder, designed for industrial use. It is sturdy, built for high-speed precision work on steel cast iron, non-ferrous metals, and plastics. The Precise-40 has a variety of uses including grinding, milling, deburring, small diameter drilling, finishing, and polishing.

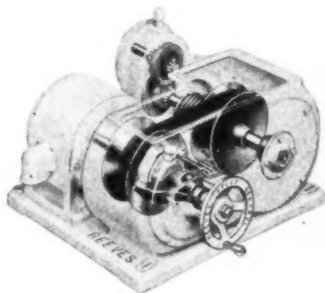
Also to be shown:

**Coolflex Flexible Shaft Attachment
Vari-Speed Lathe**

**REEVES PULLEY CO.
COLUMBUS, INDIANA**

BOOTH NO. 317-F

Vari-Speed Motodrive speed control unit



The phantom view of the Vari-Speed Motodrive illustrates the Reeves principle of a V-belt driving between two pairs of cone shaped discs which are adjustable to form an infinite number of driving and driven diameters. The unit is a complete, variable speed power plant, combining constant speed driving motor, variable speed mechanism, and speed reduction gears, if needed, in one compact plant.

Also to be shown:

**Variable Speed Transmission
Vari-Speed Motor Pulley**

**RELIANCE ELECTRIC & ENGINEERING
CLEVELAND 10, OHIO**

BOOTH NO. 302-C

V S Drive System

This is an all-electric compactly arranged, completely packaged electrical transmission system for machine tool operation providing adjustable speeds from a-c circuits, stepless speed changes over an infinite range, smooth acceleration and deceleration, and other vital control

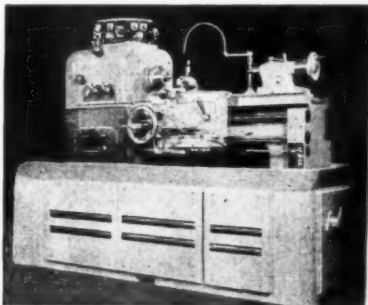
functions. Basic display will demonstrate rotating and electronic type systems to machine tools.

Also to be shown:

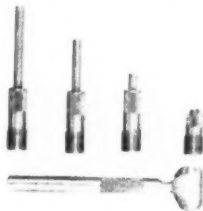
"Precisioneer Line" of squirrel-cage a-c motors for machine tool drives.

**RIVETT LATHE AND GRINDER, INC.
BRIGHTON 35, BOSTON, MASS.
BOOTH NO. 28**

Model 102OR Precision Toolroom Lathe



MECHANICS' TELESCOPE GAUGE

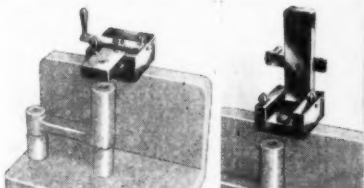


A REAL 20th CENTURY TOOL. These compact instruments measure by tens of thousandths the exact size of holes and slots using outside caliper or micrometer to determine measurement and making shrink or loose fit. A screw adjustment is its great advantage. All contact points carefully hardened and ground to radius of hole. Four measuring rods with lock adjustment measuring from $\frac{1}{16}$ " to $\frac{1}{2}$ ".

Guaranteed accurate and durable. One set packed in box. Order direct from your dealer or factory; postage prepaid; C. O. D. Patent applied for. Send for booklet. **PRICE \$7.50**

**SEABOARD TOOL COMPANY
P. O. Box No. 514, Baltimore 3, Md.**

FLIP-QUICK — DRILL JIG UNIT



Webster says:

FLIP—To snap, to toss
QUICK—Rapid, active, nimble etc.

We've combined the two and it's so fast there's no name for it.

**EASIER TO LOAD THE PART—FLIP
DRILL, TAP, COUNTERBORE, SPOT FACE,
REAM — QUICK**

One finger push releases and tips plate back. Locks automatically when flipped down.

Designers and Builders—You can save 70% of your time on drill jigs by using the Flip-Quick unit.

Simply lay out the part, select the method you wish to use for clamping and place a Flip-Quick unit in the picture. Presto—you have the fastest operating, most accurate drill jig possible to make. No more fussing around for the tool-maker, he merely attaches the unit and the jig is ready for boring.

Made in three sizes

Write for literature

**INDUSTRIAL ENGINEERING COMPANY
730 E. Sample St., South Bend 18, Ind.**

This precision cabinet lathe is capable of turning work up to 10" diameter and 26" in length, and threading to American and English standards by dial manipulation only. Built for heavy duty, without loss of its precision adjustment, the lathe can be used for high-speed carbide tool jobs.

The 1020R has a 12½" swing over the bed, 24" distance between centers, 1½" dia. collet capacity, mounted directly in the spindle, and 72 selective speeds or threads through gear box; spindle speeds between 24 to 2700 RPM are included.

Also to be shown:

Precision Cabinet Lathe

Precision Cabinet Turret Lathe

Rivett Watchmakers' Lathe

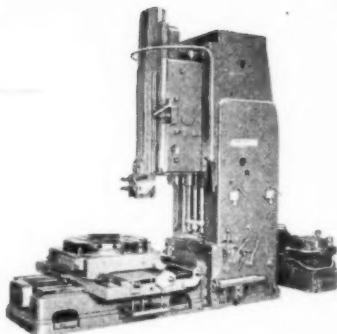
ROCKFORD MACHINE TOOL CO.

ROCKFORD, ILL.

BOOTH NO. 526

Hydraulic Slotters

Two new Hy-Draulic Slotters, built in 36" and 48" stroke sizes will be shown. All the



advantages of Hy-Draulic design are present in these vertical ram machines: high ram stroke speeds, infinite speed adjustment, overall ease in set-up and operation, and hydraulic feeds. The ram may be set

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Tasgon quickly works its way into the tightest joints . . . frozen nuts, bolts, couplings are freed instantly. Rust, paint, hardened grease and grime are dissolved by this lightning-fast rust solvent. A can of Tasgon will save you hours of labor in the machine shop.

To keep tools clean, to loosen frozen parts, whatever the rust solvent job, let Tasgon do it.

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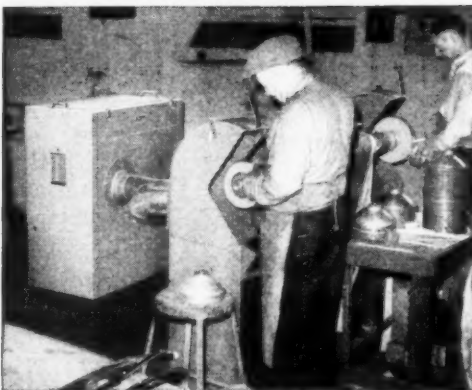
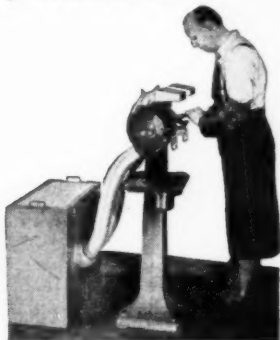
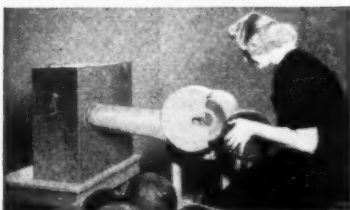


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All types of dusts are stopped by Dustkops: Dusts from Grinders, Polishers, Buffers, Sanders (belt and disc), Abrasive Cut-offs; Woodworking Equipment; Fumes from Degreasers; Vapor from Screw Machines and Thread Grinders all can be stopped with least cost by DUSTKOPS.



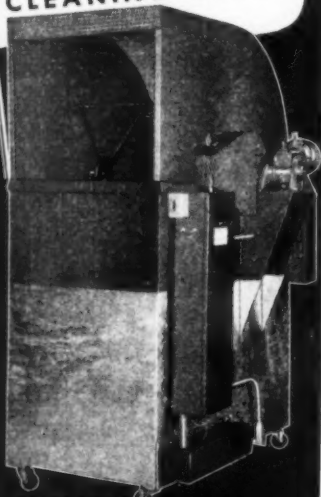
*Send for 16-page catalog
and recommendations for
your dust problem.*

AGET-DETROIT COMPANY
205 Main at Washington
ANN ARBOR, MICHIGAN

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for travel in a tilted plane when the work requires; the adjustment may be made at any angle between vertical and 10° off vertical by tilting the ram forward. The slotters provide three types of wide-range table feed: longitudinal, transverse, and rotary. Sturdy construction throughout the unit assures extreme rigidity and accuracy in all types of slotter work.

Also to be shown:

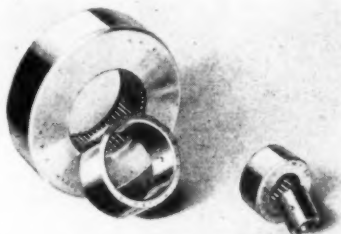
Rockford Hy-Draulic Shaper-Planer
Hy-Draulic Openside Shaper
Hy-Draulic Ram Type Shaper

ROLLER BEARING CO. OF AMERICA
TRENTON 3. N. J.

BOOTH NO. 13-B

Roller Follower

The Follower has a heavy wall, one-piece channel shaped roller guiding race which retains a single row of rollers. It has all inch dimensions. The outer race is machined from SAE 4615 tubing which provides hardened surfaces for the rollers and cam to ride on, and maintains a resilient core which absorbs shocks. The rollers or needles are machined from SAE-52100 steel and are through hardened.



They have the same conispherical ends as the standard Cyclops bearing rollers.

Also to be shown:

Standard line of roller bearings

GEORGE SCHERR CO., INC.
NEW YORK 12, N. Y.

BOOTH NO. 663

Optical Comparator

This device is suitable both for shadow images in transmitted light, and reflected images by surface illumination. It is of horizontal design for bench use, but the beam of light is vertical through a stage in natural, that is, horizontal position. The unit incorporates a standard circular screen 14½" in diameter.

Also to be shown:

Toolmaker Microscope
Precision Amplifying Gages
Illuminated Magnifiers
Micrometers

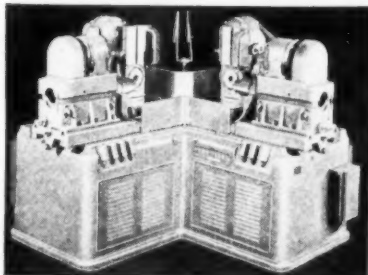
THE SHEFFIELD CORPORATION
DAYTON 1, OHIO

BOOTH NO. 202

Chamfering and Burring Machines

A new line of completely redesigned chamfering machines which will chamfer, point or burr gear teeth will be shown. Eight different models offer a choice of process and production, six built for use with standard high speed steel cutters,

and two models for the use of tungsten carbide cutters. These machines are available in either single or twin head styles. Chamfering time is reduced as much as 40 to 50%, and cutter life increased, with a greatly improved finish on the work.



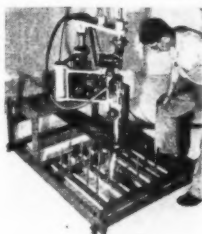
Two models are of the quick change, small run type, while six are strictly production machines.

Also to be shown:

Horizontal External Measuring Instrument
Sheffield Production Leadchek

OHMSTEDE FLAME CUTTING MACHINES

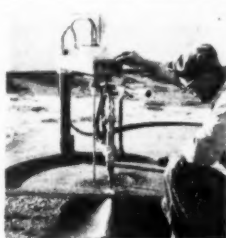
MANY OUTSTANDING FEATURES



Model SC-30
Shape Cutting Machine
Price \$60.00

- ← **OHMSTEDE
SHAPE CUTTER**
- ★ Cuts Any Shape
 - ★ Uses Either Wood or Steel Templates
 - ★ Magnetic Tracing with Steel Templates
 - ★ Range—30"x60"
 - ★ Cuts Circles Up To 30" Diameter

- OHMSTEDE
CIRCLE CUTTER** →
- ★ Self-Contained Power Unit
 - ★ No Electrical Power Connections Required
 - ★ Perfect Hydraulic Speed Control
 - ★ Will Cut Any Size Circle Up to 38" Diameter
 - ★ Bevels at Any Angle



Model CC-36
Circle Cutting Machine
Price \$275.00

Low initial cost, simplicity and ease of operation and high quality work even by unskilled operators make both Ohmstede Machines real buys.

Immediate Delivery
See Your Nearest Dealer or Write

OHMSTEDE MACHINE WORKS — DIV. CM — BEAUMONT, TEXAS

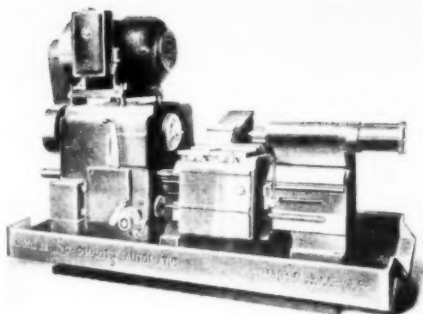
**SENECA FALLS MACHINE CO.
SENECA FALLS
NEW YORK**

BOOTH NO. 3

Model AR Lo-Swing Lathe

Foremost of the new features is the instantaneous tool relief control mechanism, which permits reversing the rotation of the feed mechanism at any time during the machine cycle, and reduces tool breakage and down-time. In case of necessity, the operator simply pushes a lever mounted on the carriage which reverses the rotation of the feed mechanism and thereby returns the carriages and slides to the starting position without disturbing the timing of the slides or the setting of the tools.

The simplified changeover mechanism has been incorporated in this machine. All cams may be pre-set to graduated dials for the desired length of cut, eliminating loss of time. Another feature includes a new type front carriage designed to fa-

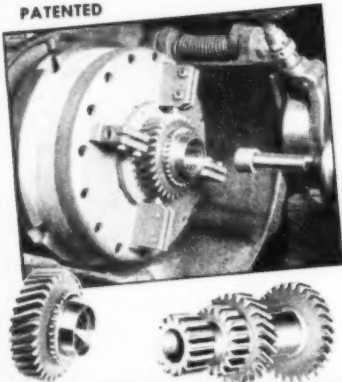


cilitate loading and unloading of the parts.

Also to be shown:

Double End Drive IMP Automatic Lo-Swing Lathe
Model LR Automatic Lo-Swing Lathe
Model CS Lo-Swing Automatic Drilling and Centering Machine
Seneca Falls Automatic Work Driver

PATENTED



DIAPHRAGM CHUCKS

Look, a high speed, precision chuck with no parts to wear out! Result: Maximum accuracy, minimum maintenance! Because the Woodworth design assures the ultimate in concentric chucking. Obviously, it will solve your precision chucking problems, as it has already for large manufacturers of gears and other production parts. Send your precision chucking problems to us—at no obligation.

MECHANICALLY OR AIR OPERATED

ACCURACY YOU CAN TRUST

WOODWORTH

N. A. WOODWORTH CO., SALES DIVISION • 1300 E. NINE MILE RD., DETROIT 20, MICH.

**SIZE CONTROL CO.
DIV. OF AMERICAN GAGE &
MACHINE CO.
CHICAGO 6, ILL.**

BOOTH NO. 401

Centerless Lapping Machines



This new development gives a precision finish of less than 2 micro inches to cylindrical parts. No special operator skill, and no special tools nor expensive set-ups are

required. A specialist in lapping operations will be present to explain and answer questions.

Also to be shown:

**Plug and Thread Gages
Snap and Ring Gages**

**THE SKINNER CHUCK CO.
NEW BRITAIN, CONN.**

BOOTH NO. 638

High Speed Rotating Air Cylinder

The new Skinner aluminum high speed rotating air cylinders have been operated with satisfactory results at speeds up to 3500 RPM over long periods of time; they are recommended for installation on machines operating at speeds up to 3000 RPM. These cylinders, in sizes 4½" to 12" in diameter, are made from aluminum alloy forgings, thus eliminating the porosity which is normal in aluminum castings.

Also to be shown:

**Compensating Power Chuck
Air Chuck and Cylinder Holding Unit
Skinner Solenoid Valves**

NEW

KNEE TYPE MILLING MACHINE

Designed for small shops, instrument laboratories and individual users. Built strong and sturdy for work of the finest quality and accuracy—at low cost.

All rotating parts move in anti-friction bearings. Other features include heavy construction, adjustable dials, all bearings of sealed construction and lubricated for life of machine, etc.

CAPACITY: Longitudinal feed 6", transverse feed 1½", vertical feed 4".

Write for Complete Details Today.

*Manufacturers of Precision Knee Type Milling
Machines and Production Attachments*

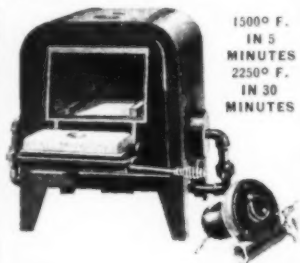
**BURKE
MACHINE TOOL CO.**

510 Sandusky Street, Conneaut, Ohio



Quick Acting JOHNSON FURNACES

**Harden ANY steels, tools,
or dies quickly and at Low
Cost.**



1500° F.
IN 5
MINUTES
2250° F.
IN 30
MINUTES

JOHNSON Hi-Speed No. 70 Bench Furnace

Designed primarily for high speed steels this *Quick Acting* JOHNSON Furnace is equally efficient for heat treating any carbon steel tools, dies, or small metal parts. Brazes carbide tipped tools. Easily regulated. Economical in operation. Reaches desired temperature FAST to save time and gas. Firebox 5 x 7 3/4 x 9. Complete with Carbo-trax Hearth, G.E. Motor, and Johnson Blower.

\$105.50

F.O.B. Factory

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TODAY!**

SEND FOR FREE CATALOG

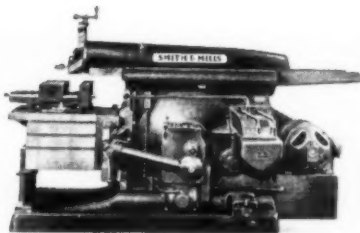
JOHNSON GAS APPLIANCE CO.

570 E. Ave. N. W., Cedar Rapids, Iowa

THE SMITH & MILLS CO.
CINCINNATI 25, OHIO

BOOTH NO. 665

Smith & Mills Shapers



These machines, built in five sizes, 16", 20", 25", 28", and 32", incorporate two outstanding features: a new slotless type ram for chatter-free machining, and a unique bull gear for longer life. Increased weight and strength have been added to the unit for higher speeds on longer strokes, as well as fingertip flexibility of the controls, which give this new product greater productivity and accuracy.

STEARNS MAGNETIC
MANUFACTURING CO.
MILWAUKEE 4, WISCONSIN

BOOTH NO. 677

Magnetic Disc Brakes

A newly developed unit is the Stearns magnetic disc brake for fractional horsepower motors. This accessory has a maximum torque rating of 2 lbs. ft. for continuous duty; 3 lbs. ft. for intermittent duty, and is designed for use on fractional horsepower alternating current motors. The motor sizes covered are one-sixth, one-quarter, one-third, one-half, and three-quarter horsepower. This new brake may be motor or floor mounted and can be supplied for horizontal or vertical operation.

Also to be shown:

Friction Control Devices
Magnetic Separators and Pulleys

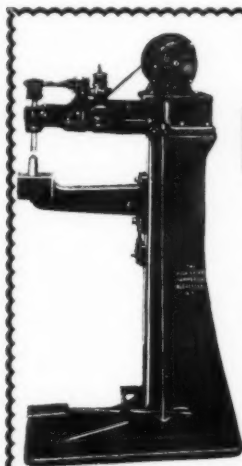
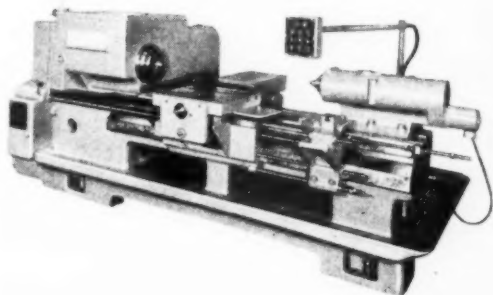
**SUNDSTRAND MACHINE
TOOL CO.
ROCKFORD, ILL.**

Booth No. 20

Model 16 Automatic Lathe

This lathe, with a 75 HP spindle drive motor, provides a multi-tool automatic cycling Lathe capable of making full use of carbide tools. Capacity includes 60" between the head stock and tail stock center, 17" swing over slides. Other standard bed lengths for 36" or 84" between centers are also available; special long beds can be furnished. The spindle motor runs continuously, as an automatic clutch and spindle brake are provided. At the end of the feed stroke, the clutch automatically cuts out the drive from

the spindle motor which continues to run, and the magnetic self-adjusting brake quickly stops the spindle rotation. Disturbances on the line are eliminated, since the motor does not start and stop for each cycle; this feature permits use of a standard motor which would not be suit-



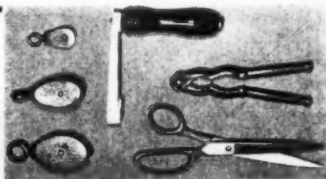
COLD RIVETING



CAPACITY FROM 1/64" dia.—2" dia. SOLID RIVET

SEND US sample assemblies to be riveted and returned for your inspection and approval along with production data and quotations on necessary High Speed Hammer to perform riveting work. No cost or obligation for this service.

High Speed Hammers made in 10 sizes and with horizontal gaps to handle any riveting job. Multiple headed units to form 2 or more rivet heads at once are available.



THE HIGH SPEED HAMMER CO., INC. 311 Norton St.
Rochester 5, N. Y.

CHUCKING IRREGULAR PARTS?

Production time and money can be saved in making chuck jaws for holding irregular shaped pieces by the Cerromatrix method.

Low-temperature-melting Cerromatrix can be cast against die castings, forged metal parts, rubber, wood and most molded plastics without danger of burning or warping.

Cerromatrix can be poured at 250° F., has a Brinell hardness of 10 and expands slightly after casting. These features make it ideal for constructing split jaw chucks and nesting jigs. Can be reused indefinitely.

Attach the coupon to your letterhead to receive the Cerromatrix Manual which will give you full details.

Cerro Be Pasco Copper Corp.

Dept. 12, 40 Wall St., New York 5, N. Y.

Please send me your Cerromatrix Manual.

Name..... Title.....

Company.....

City..... State.....

Makers of Cerrobased, Cerrobend, Cerrolow, Cerrosafe & Cerrotru

able otherwise for fast cycling of more than 30 times per hour.

The lathe has screw feed to the front carriage and full adjustment of both front and rear carriages between head stock and tail stock. Both front and rear carriage ways are provided with hardened steel wear strips. Wide range of speeds and feeds is provided both the spindle and front carriage drive unit, by two different driving gear centers. The spindle speed range is from 15 to 750 RPM; feed range through pick-off gears is from .0025 to .100 per revolution. In addition, this type of feed and speed box makes possible four speed and feed changes with each set of two change gears. Complete control of all cycles is provided by the adjustment of dogs in the control disc.

Also to be shown:

No. 63A Double End Drilling and Centering Machine
Automatic Lathe for Stator Frames
Triplex Rigidmil

SQUARE D COMPANY
INDUSTRIAL CONTROLLER DIV.
MILWAUKEE 12, WIS.

BOOTH NO. 678

Electrical Control Equipment

This firm will be represented by many new items of power distribution and electrical control devices. Some will be operating to demonstrate new push button and limit switch features, designed specifically for machine tool service. An electronic resistance welder control will be shown, as well as several full scale models of several types of special control panels, both AC and DC, typical of machine tool requirements.

D. A. STUART OIL CO., LTD.
CHICAGO 23, ILLINOIS

BOOTH NO. 317-L

Stuart Oils

Attention will be focused upon the solutions of various metalworking production problems through a display of representative parts machined with Stuart Oils. Difficult and unusual jobs which have been cleared up by the application of Stuart Oils will be on display. Complete descriptive data for production engineers, explaining operations performed, and the uses of these lubricants, will be available.

Cut

STRAIGHT

with a

CURVE

Do it with



Patented

ABER

**Shearing
Efficient
Accurate
Productive**

CURVED TOOTH MILLING CUTTERS

The Only *Standard* Milling Cutter with Curved Teeth.
Others have increased their production with ABER Curved Tooth Milling Cutters. WHY don't you?

Aber Engineering Works, Inc. Waterford, Wisc.

**SUPER TOOL COMPANY
DETROIT 13, MICH.**

BOOTH NO. 676

Ejector Type Carbide Tool



A complete line of carbide tipped cutting tools, both standard and special, will be displayed; ejector type (illustrated), threading, and boring tools, reamers, centers, milling cutters and end mills, saws, counterbores, solid carbide drills, are included.

**You need only one
DORMAN TAPPER**

... Instead of three ordinary tappers ... to tap No. 2-56 to $\frac{3}{8}$ " in steel or any other metal.

Here are three more advantages:

1. No collets to get lost or need replacement.
2. Adjustable friction drive.
3. Can produce No. 3 or No. 4 fit.

The No. 2A tapper drives from $\frac{3}{8}$ " to $\frac{7}{8}$ " and No. 3-A drives from $\frac{1}{2}$ " to $1\frac{1}{4}$ " in any tapable material.

**Write for further details.
DO BETTER TAPPING AND
SAVE MONEY.**

**Price \$40.00 with M.T. Shank
or \$45.00 with Adapter for
Male Spindle Drill Press.**



Dorman Machine Tool Works
40 S. MAC QUESTEN PKWY.
MOUNT VERNON, NEW YORK

A heavy duty lathe will be operated demonstrating the advantages of the Ejector type tools with solid carbide insert bits. Straight, offset, and vertical Ejector type tools will be included. The offset Ejector will be shown machining surfaces impossible to reach with straight tools. A simple turn of the recessed Ejector screw on these tools extends the carbide bit for resharpening so that it is never necessary to grind or bring the diamond wheel in contact with the steel holder.

**SUN OIL CO.
PHILADELPHIA 3, PA.**

BOOTH NO. 644

Petroleum products

Exhibit consists of fountain displays of new grades of Sunicut cutting oils made with Petrofac; a display showing how lubricating oils are tested for their resistance to corrosion and sludging; a "Service Station" for machine tool exhibitors, where they can obtain cutting oils and lubricants for the machine tools they have on display; literature.

**SYNTHANE CORP.
OAKS, PENNSYLVANIA**

BOOTH NO. 34 B

Synthane Plastics

Featured will be hundred of laminated and molded-laminated products and parts most of which will be displayed on open counters for ease of handling and inspection by visitors. One of the attractions is a large electronic device for comparing the noises made by metal and Synthane gears.

Also to be shown:

**Laminated plastic sheets, rods, tubes
Molded-laminated and fabricated parts.**

**THE TAFT-PIERCE MFG. CO.
WOONSOCKET, R. I.**

BOOTH NO. 601

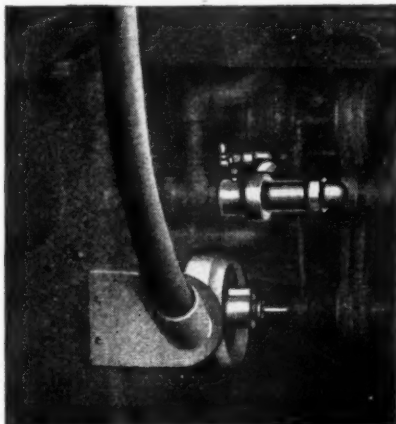
Precision grinding developments

The CompA-Rator is a new air gage. Also on exhibit will be No. 1 Precision Surface Grinder, Rotary Surface Grinder, Fixtures and Accessories, Superpower Magnetic Chucks, Thread Gages and Gage Blocks, Inspection Equipment, Angle Plate.



**CENTRIFUGAL
COOLANT PUMPS**

**Heat-Control
Helps
Cost-Control**



FRICTION heat—in work or tools—must be rigorously and scientifically controlled. If not, both suffer and your costs go sky high and competitors hold the edge on you.

But heat-control through FULFLO COOLANT PUMPS looms high on your list of *musts* throughout production.

These shop-tested pumps keep your coolants flowing evenly, "coolingly", reliably.

Standard or special models. Pipe sizes $\frac{3}{8}$ " to $1\frac{1}{2}$ "; motor, belt or direct drive. No bearings or other parts to wear out.

THE



*Write on your letterhead for
Fulflo Mechanical Data Book*

Specialties Co., Inc.
BLANCHESTER, OHIO

ELECTRIC HOISTS



**Like a Giant Hand at Your
Finger Tips, Controlled by
Your Thumb!**

P & H ZIP-LIFT

These powerful hoists lift and hold anything up to 500, 1000 or 2000 lbs. Load can be stopped quickly, accurately—and held—at any point. Easy to operate by push button control. Smooth wire rope hoisting—cable can't wedge. Safety switch prevents load block from jamming into drum. Easily mounted 3 ways (and interchangeable). Dust-, weather-, acid-proof Housing for in- or outside use. **INDISPENSIBLE.** 1 and 3 phase models.

Immediate Delivery

Send for illustrated booklet.

ALLIED
Machinery & Supply Company
548 W. Monroe St.
CHICAGO 6, ILL.
PHONE FRANKLIN 9874

TWIN DISC CLUTCH CO.
RACINE, WISCONSIN

BOOTH NO. 453

Model P Air-actuated Clutch



Adapted to heavy type machinery such as punch presses, brake presses, forging machines and suited for remote control and ease of operation. Clutch need not be adjusted. Sizes range from 14" to 42" in one-, two-, and three-plate construction. Working capacities range from 75 to 1325 hp.*

*Illustrated is Twin Disc Small Hydraulic Coupling.

Also to be shown:

Friction Clutches
Model CL Clutches
Model EH Clutch

U. S. TOOL COMPANY
AMPERE, NEW JERSEY

BOOTH NO. 236

Multi-Slide Machine

This machine is known as No. 11 U. S. Multi-Slide. It is a high speed unit to produce small precision stampings at rates up to 500 per minute. The unit will be arranged with automatic lubrication system, variable speed drive and 1 h.p. motor.

Also to be shown:
Other Multi-Slide Machines

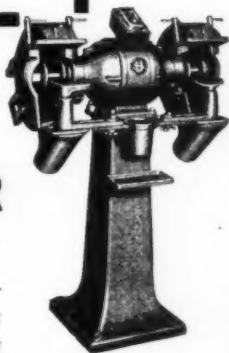
**UNITED STATES
ELECTRICAL TOOLS
BUILT FOR
MEN WHO DEMAND
BEST PERFORMANCE**

★ Designed first, last and foremost for useful, practical, dependable performance in production and maintenance. Engineered so they are well-balanced, perfectly proportioned to reduce fatigue and increase efficiency. Built of basic materials for long-lasting, economical service. In brief, these are **the best electrical tools made!**

★ **UTILITY
FLOOR GRINDER**

12, 14 and 18" wheels

Totally enclosed motor; push button starter for overload protection; ball-bearings enclosed in dust-tight housings, enclosed adjustable wheel guards.



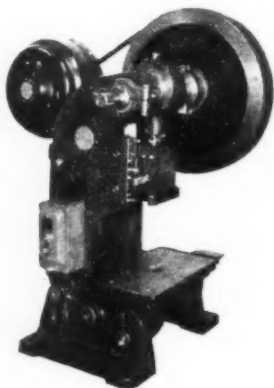
Model 500



The UNITED STATES ELECTRICAL TOOL Co.
CINCINNATI, OHIO

Motorized
HUB PRESS
Available
From
DO-ALL STOCK

*Any of Their
35 Stores
4½ to 30 Ton*



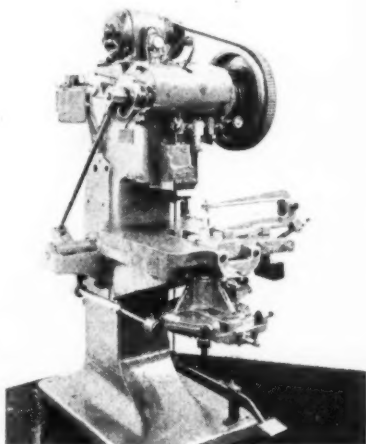
*Call Your
Nearest Do-All
Engineer For
Information or
Delivery*

W. F. BREWER MACHINE CO.
75 Laurel St., Hartford, Conn.

**THE V & O PRESS CO.
DIV. OF ROCKWELL
MANUFACTURING CO.
HUDSON, NEW YORK**

BOOTH NO. 150

High Speed Notching Press



This machine will be in operation, and will operate at speeds up to 800 RPM. It is used for notching electrical motor laminations, and is of particular interest to electrical motor manufacturers.

**VAN NORMAN CO.
SPRINGFIELD 7, MASS.
BOOTH NO. 9**

Van Norman Oscillating Radius Grinder

This is an automatic machine regulated with electronic controls; it is used primarily in the ball bearing industry for grinding the ball groove in inner and outer bearing races.

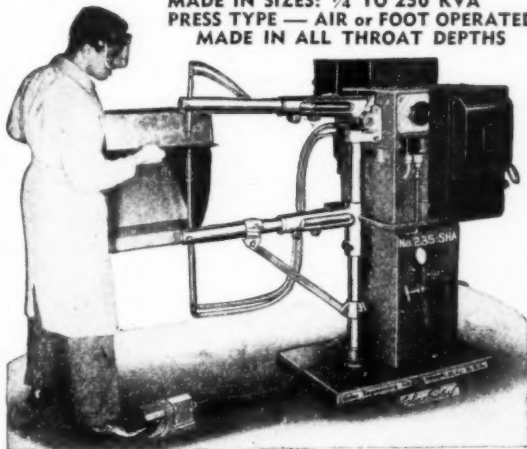
Also to be shown:

**Ram Type Milling Machines
Horizontal Knee Type Milling Machines
Van Norman Machine Tool Accessories**

SPOT BUTT ARC WELDERS

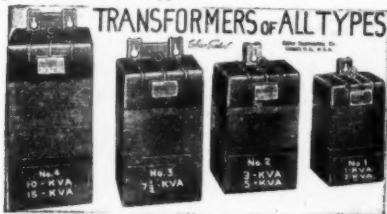
**SPOT WELDER TIPS, HOLDER & HORNS
ASK FOR EISLER'S TIP & WELDER CAT**

MADE IN SIZES: 1/4 TO 250 KVA
PRESS TYPE — AIR or FOOT OPERATED
MADE IN ALL THROAT DEPTHS



WE MAKE ALL TYPES OF TRANSFORMERS
SIZES FROM 1/4 TO 250 KVA OIL COOLED TYPE

TYPES: Furnace, Distribution, Lighting,
Power, Auto, Phase Changing, Air, Oil or
Water Cooled, Reactors and Special Trans-
formers of all types.



Arc Welders
100 TO 400 AMPS.



Butt Welders



FOOT
AIR
MOTOR
OPERATED

Spot Welders



PRESS
TYPE

Spot Welders

FOOT, AIR
OR MOTOR OPERATED

**CHAS. EISLER
EISLER ENGINEERING COMPANY, INC.**

762 South 13th Street (near Avon Avenue)
NEWARK, NEW JERSEY, U. S. A.

Buy KIPP AIR GRINDERS Because

The RPM's stay up while grinding ... not only when the grinder runs idle.

It is an established fact that surface speeds must stay up to approximately a mile a minute if you want to grind — not just rub. The speed of Kipp air grinders drops but slightly when put to work. That means better work—longer wheel life.

Buy Kipp air tools for best results, lower prices.

MODEL JA
50,000 R.P.M.

\$33²⁵

IN U.S.A.



Weight 12 ounces;
length 6¾ inches;
chuck size ⅝ inch.
Wheel guard re-
moved for better
illustration.

MADISON-KIPP CORP.

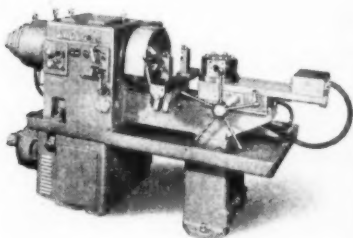
207 Waubesa St., Madison, Wis., U.S.A.

- Skilled in DIE CASTING Mechanics
- Experienced in LUBRICATION Engineering
- Originators of Really High Speed AIR TOOLS

THE WARNER & SWASEY COMPANY
CLEVELAND 3, OHIO

BOOTH NO. 309

16" Electro-Cycle Turret Lathe



This machine was developed especially for machining non-ferrous material. The drum control shown on the turret slide accomplishes all starting, stopping, and speed changes, and automatically reverses the work spindle as required. Thus, machine-handling time is greatly reduced, and the burden of manipulation is removed from the operator. Specifications include a capacity 1½" bar, a swing of 16½"; motors are 2½ and 5 HP.

Also to be shown:

Single Spindle Automatic Chucking Machine

Multiple Spindle Automatic Scroll Chucks

Precision Tapping and Threading Machine

Electric Turret Lathe

Saddle and Ram Type Turret Lathes

**WARNER ELECTRIC BRAKE
MANUFACTURING CO.**
BELOIT, WISCONSIN

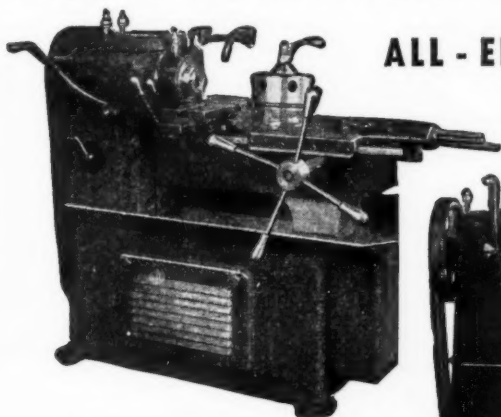
BOOTH NO. 328-A

Warner Electric Brake and Clutch

This unit consists of a simple electro-magnet and an armature disc. The armature, when used as a brake, rotates with the shaft, pulley, flywheel etc. by which it is carried, while the magnet remains stationary. When the magnet is energized, it attracts the armature, and creates the

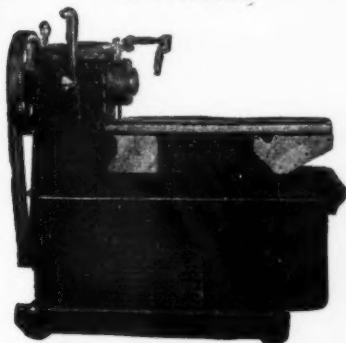
"BASIC UNIT+PARTS" PLAN

Gives you a Specialized Production Lathe at Lowest Cost



ALL-ELECTRIC DRIVE

with rapid speed changing and variable speed drive of 0 to 1500 RPM in either direction.



UTMOST FLEXIBILITY

Above is illustrated the "MINNEAPOLIS" Production Lathe equipped with all-electric variable speed drive. Speed range from 0 to 1500 RPM in either direction provides exactly the speeds needed for any series of machining operations. Any speed desired is instantly obtained with a crank while lathe is running. A dynamic brake operates automatically for quick stopping and reversing.

BASIC LATHE UNIT

with any one of 4 drives: single speed, low speed chain drive, four speed, or all-electric variable speed as shown above. You can then add only the equipment needed for your particular production "set-up".

SMALLER INVESTMENT — Lower Production Cost

The "MINNEAPOLIS" Production Lathe is extremely adaptable to any production set-up, particularly second operation work. Its simplified design and ease of control enable inexperienced operators to turn out high speed volume production.

The "MINNEAPOLIS" has $2\frac{1}{4}$ " collet capacity, 14" swing, heavy duty spindle assembly. It is backed by more than 50 years designing and manufacturing experience. Send for literature — write us your production problems. Send sample part or drawing if possible — let us quote you on a "tailor-made" lathe for your work.

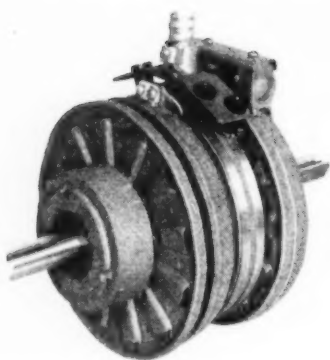
CENTRAL MACHINE WORKS CO.

Machinery Designers and Manufacturers Since 1890

1256 Central Ave. N. E.

Minneapolis 13, Minn.





braking or clutching effect through friction of the magnet poles and the magnet face lining material, upon the armature. As a clutch, both the magnet and armature rotate with whatever part, hub or pulley to which it is attached. The magnet receives its current through collector rings and brushes.

WEDDELL TOOLS, INC.
ROCHESTER 11, N. Y.
BOOTH NO. 486
Inserted Blade Cutters

Featured in the Weddell display will be the new Super Carbide Tipped Tri-Bit Face Mill, designed for the high production milling of delicate castings. The heavy duty cutter has blades set at radial angles with broad chamfer for roughing. The medium duty cutters are made particularly for finishing with the blades adjusting mostly axially. Other tools shown, beside the complete line of face mills, are adjustable bladed boring bars, hollow mills, and special cutting tools.

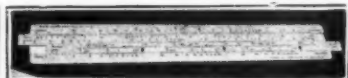
WILSON MECHANICAL INSTRUMENT CO., INC.
DIVISION OF AMERICAN CHAIN & CABLE CO., INC.
BRIDGEPORT 2, CONN.
BOOTH NO. 452
Tukon Tester

The "Rockwell" Hardness Tester tests the hardness of all metals, tools, dies, heat

treated steel parts, brass, bronze, etc.; also the "Rockwell" Superficial Hardness Tester, for thin materials, and superficially hardened surfaces. This instrument is used for microhardness testing of extremely thin material, small precision parts, electro-deposited metals, etc. It applies loads as



light as 25 grams, and is used with the Knoop diamond indenter. The Tukon Tester is also designed for macrohardness (conventional) testing, with loads up to 50 kg., and the 136° Diamond Pyramid Indenter.



WAKCO-NOVOTNI WEIGHT RULE
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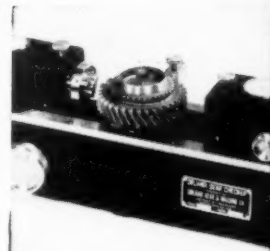
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How to Select the Best

OILS

FOR HYDRAULIC EQUIPMENT

F. Houghton & Co.

There are two bases from which to evaluate oils for use on hydraulic equipment. Both methods are discussed from the standpoint of decreasing maintenance costs and increasing service life of equipment.

There is no doubt that the careful selection of hydraulic oil will have a great influence on performance, maintenance cost and service life of hydraulically actuated equipment. The question is, how to select the proper oil. . . on what basis to evaluate it?

Two choices are open. The first is to choose the oil medium through its adherence to set specifications. The second is by accepting predetermined evaluation, based on performance rather than on physical specifications of the oil. Ex-

perience has proven the second method to be safer and wiser; it is the purpose here to show why.

Physical and chemical properties of an oil do have two specific uses. First, the buyer can use test figures to check physical properties of successive shipments for uniformity and, secondly, a technical oil man can tell in a general way what the basic type of oil is by studying the specifications.

Physicals are usually limited to the following factors:

Viscosity
Gravity
Flash and Fire Points
Color
Pour Point
Carbon Residue
Demulsibility
Neutralization Number

Before discussing the value of these in their application to hydraulic oil performance, it may be well to list the other factors—many not reducible to exact laboratory determination—which should be understood if the correct hydraulic oil is to be selected for the purpose.

For example, Viscosity Index is important. Sometimes that figure is included in specifications; often it is not. It refers, of course, to the ability of an oil to resist change in viscosity when subjected to change in temperature. A low V.I. oil thins out too rapidly when hot. Two oils may have the same viscosity at 100°F. but may show an entirely different reading at operating temperature. The one which shows the least change has the highest viscosity index and, from that standpoint, it is preferred for hydraulic use. It is pos-

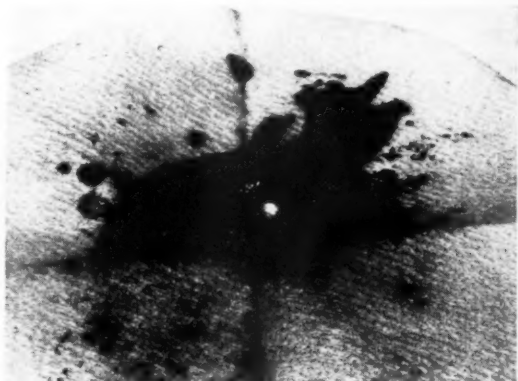
sible to improve the V.I. of an oil by synthetic additive agents, bringing the figure up from 120 to as high as 170. Some of these additives have little effect on other factors listed later.

Oxidation Stability is another factor exceedingly important in adjudging a hydraulic oil. This refers to the ability to resist oxidation and deterioration for long periods. It is based on the inherent chemical structure of the oil itself, which can be further fortified by additives developed to help oils resist break-down.

Oxidation results in sludge formation, which, as everyone realizes, will affect oil service most adversely. An hydraulic oil must be stable to withstand the combined destructive effects of high pressures, heat, moisture, violent agitation and the catalyzing effect resulting from contact with metal surfaces in the hydraulic system.

As oxidation takes place, the oil thickens up, darkens in color (indicating suspended material) and gradually deposits sludge and gums on valves, pump parts and bearings. Organic acidity is formed, which is evidenced by an increase in the neutralization number.

• • •
Above is a ball check valve and sludge taken from a milling machine. Failure to provide a stable oil resulted in black sludge formation.



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The MILWAUKEE PROFILE GRINDER

is designed for the precision grinding of hardened steel parts for dies, jigs and fixtures. It is adapted to the grinding of curved and irregular contours, internal or external. Grinding wheels at end of vertical spindle revolve at 20,000 R.P.M.; reciprocate $\frac{1}{8}$ " vertically, 100 times per minute.

The MILWAUKEE DIE FILER

companion machine, is built for precision, straight-line, sharp corner filing, sawing and lapping . . . particularly in the softer metals, preparatory to hardening.



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Here again, it may be seen that the physicals given for an unused oil may change rapidly in service if that oil is not resistant to oxidation.

There are various methods of testing oil stability, the best known being the Indiana and the Continental Oxidation Tests which determine sludge formations by heating 300 cc. of oil to 341° F in the presence of air bubbled through at a constant rate. The Continental Test also uses an iron wire catalyst which accelerates oxidation. Sludge determinations are run on samples after 50, 100 and 150 hours (Indiana Test) and plotted against time in hours. To find the amount of sludge present, a 10-gram sample is diluted with 100 cc. of petroleum naphtha; since only the oil goes into solution, the sludge or oxidized oil precipitates and may be filtered or measured.

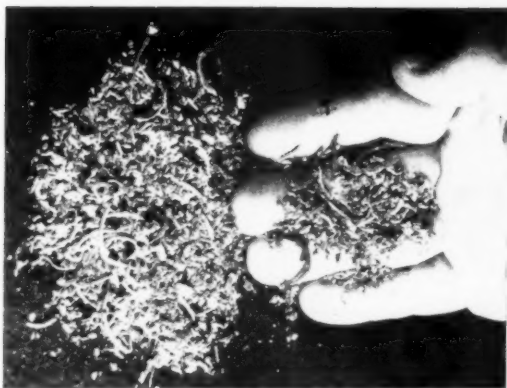
The extent to which changes take place in different oils depends on the type of oil, type of refining and whether it has been treated to provide further resistance to oxidation. A great difference in stability will be found in varying types of oils. One oil may break down and sludge excessively after 24-hours run in an hydraulic machine, while another will perform satisfactorily for 1,000 hours.

This difference is partially due to the presence of minute quantities of certain chemical compounds which are found naturally in the oil. These are called oxidation inhibitors. As oils are super-refined under some of today's processes, these inhibitors are removed. To improve the stability of the oil, it is possible to add synthetic oxidation inhibitors, in quantities from 0.005% up to 0.5%. The effect that these have on oil stability can be seen in Table I. While all five of these oils tested might be used in hydraulic systems, if operating conditions are severe it is evident that Samples "D" and "E" would hold up

• • •

Seven cupfuls of these metal filings were removed from the filter of a newly installed, hydraulically operated elevator. Although the filter extracted most of the chips, considerable damage was done to piston and hydraulic equipment before this condition was learned.

• • •



longest, while "A" and "C" would deteriorate rapidly in service.

Besides the two oxidation tests, briefly described above, there are other lesser known tests—the Sligh, the Underwood and the A.S.T.M. Oxidation Tests for Turbine Oils.

It should be borne in mind that the standard test methods to determine resistance of oils to oxidation were originally developed for engine oils and that test temperatures were set at 341° to 400° F. It is obvious that hydraulic oils seldom approach that figure in service and that, being lighter than engine oils, they may tend to vaporize around 350°F., driving off light ends. Thus, the increase in viscosity will be

greater for hydraulic oils when tested than it actually would be in service in a closed system operating at a lower temperature.

Gum Solvency is another factor for which no definite specification can be written. When an oil begins to break down, as even the best will eventually do under prolonged, severe service, it is important that the oil have the ability to hold gums and sludges in solution. If the oil has been processed with active solvents, it will tend to hold incipient formations in solution, preventing their being deposited on control valves, in pipe lines, or filtering units or in reservoirs.

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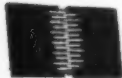
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No. 9
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CLIPPER BELT LACER COMPANY, Grand Rapids 2, Michigan, U.S.A.



Film Strength is, of course, a measurable property but it is seldom included in the specifications because the lubrication function of a hydraulic oil has been generally considered as secondary. Nevertheless, film strength can be important, for lack of it will result in excessive wear of moving parts and eventually in increased clearance.

Freedom from Corrosion is another factor to be considered. The acid number of the oil, when new, may be satisfactory, but, after use, the oil may tend to develop corrosive tendencies when it begins to deteriorate. The base stock should have been carefully processed with the specific aim of inhibiting harmful acid formation.

Allied to this, is the need for Rust Preventive ability. Many systems are idle for lengthy periods after a run at elevated temperatures. This permits moisture to be condensed in the system, resulting in rust. Also, a machine tool using a water-soluble coolant may not be entirely tight, allowing water to leak into the hydraulic system. Rust preventive additives, usually synthetic chemicals, are often used in hydraulic oils.

Lubricity, or oiliness, is another factor not determinable by specification. Some machine tools use the same oil both as an hydraulic medium and lubricant, thus requiring a high degree of oiliness. Additives to increase this facility are often added, overcoming jerky motion when sliding over the ways.

Anti-Foaming Agents constitute still another type of treatment of hydraulic oils. Such agents are usually synthetic organic chemicals used in percentages varying from 0.001% to 0.5%. Some hydraulic systems are subjected to excessive foaming as the oil is returned to the reservoir, either due to construction of the machine, or even to presence of other additives already described.

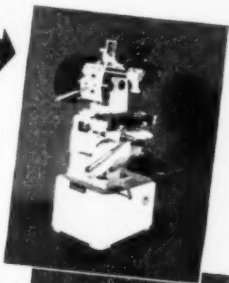
From the foregoing, it will be clear that science has improved on oil as it

Nichols MILLERS - - the millers that use their heads

Nichols

STANDARD MODEL

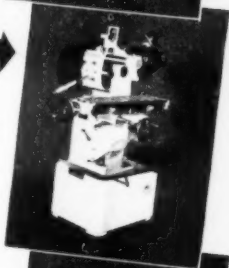
Nichols Millers are built to the highest standards of precision so that tool room, laboratory, or production work may be produced to tolerances "in tenths." The Standard Nichols Miller is a manually operated horizontal type machine. It combines with all the conventional movements of table, saddle and knee a rise and fall spindle which allows the cutter to be brought to the work. This flexibility makes possible operations such as broaching, key seating and contour milling as well as regular milling.



Nichols

TOOL ROOM MODEL

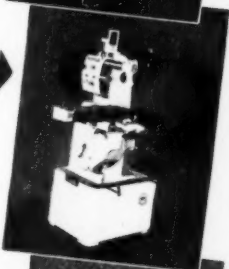
The Tool Room Model is a standard Nichols Miller, equipped with a special table assembly providing greater working surface and increased longitudinal feed. Both longitudinal and transverse feed screws are fitted with hand wheels and extra large adjustable micrometer dials having easily read machine-engraved graduations. This machine is especially valuable in the tool room because of its compactness, generous capacity and ability to turn out a wide variety of extremely accurate work.



Nichols

AIR FEED MODEL

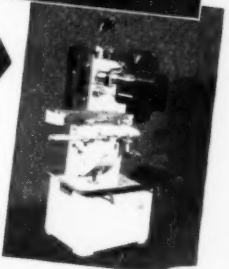
The Standard Nichols Miller equipped with pneumatic table feed substantially increases its value as a production machine. The power feed, which operates on 75-175 psi is entirely automatic — the operator merely has to load and unload pieces and can with ease run two or more millers. Thus, output can be multiplied to a mass production scale while tolerances are held to "tenths."



Nichols

DOUBLE SPINDLE MODELS

Two Spindle Millers are most valuable for long production runs where simultaneous action of two cutters is practical. Two basic double spindle models are made, one with two identical spindles, and the other with two opposed spindles. These millers, available with hand or power feed, will be built or modified to suit the individual user's requirements.



For complete details and information write for the booklet, "The Miller that Uses Its Head".



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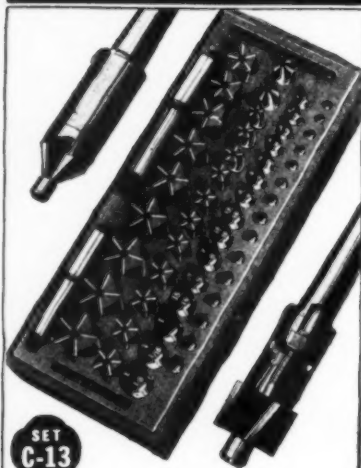
For heavy duty counterboring requiring rigidity, strength and perfect alignment, choose Gairing's type C. The handy kit shown below, gives you a wide range of cutter and pilot combinations.

COUNTERBORE SETS

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Sturdy box with hinged cover contains: holders C-12 and C-13; 20 cutters from $\frac{3}{16}$ " to $1\frac{3}{4}$ "; 28 pilots from $\frac{3}{32}$ " to $1\frac{1}{8}$ " and two $\frac{3}{8}$ " countersinks, one 70° and one 82°.

GAIRING
TOOLS

comes from the refinery by means of a variety of treatments given that oil. To sum up, it is possible to strengthen many properties by additives: V.I., anti-foaming, gum solvency, film strength, anti-corrosion, and—most important of all—oxidation stability.

However, it should be made clear that, while additives will improve a good base stock, they will not necessarily make a good hydraulic oil out of a cheap or ill-fitted stock. They will make a good oil better, but they cannot make a poor oil equal to a good one.

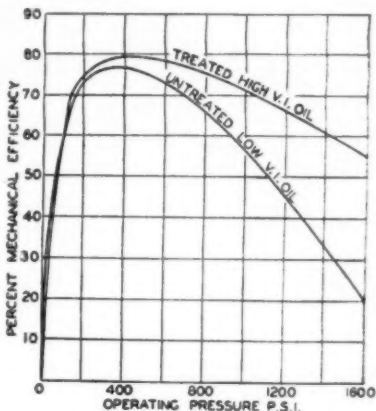
Now, to get back to specifications, as enumerated at the outset:

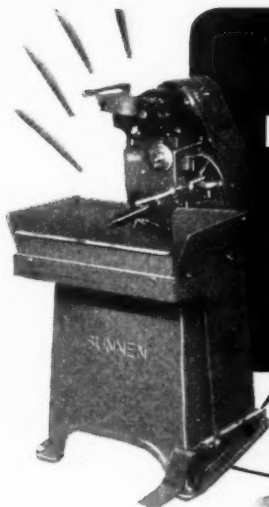
Viscosity tells merely the rate of flow of a new oil. It changes in service, as has been pointed out.

Flash and Fire indicate the temperature at which an oil begins to volatilize. These tests may be of some significance

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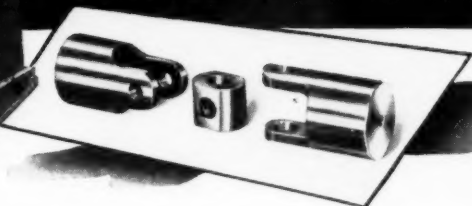
Chart to show the relative efficiency of low and high viscosity index oils, both of which have the same viscosity reading at 100° F. but, when operating at higher temperatures, show a big difference in results.





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Hydraulic Two-Way Control Valve. Hole is honed to eliminate leakage.



Compressor Yoke. Alignment maintained and better finish produced.



Drawing and Blanking Die "Saves time in producing smooth base metal finish."



Bronze Valve. The Sunnen method of honing is used to secure a high finish and accuracy.



Shell Loading Die.

This machine enables Curtis to "precision fit" tandem, as well as single holes as shown above.

The Sunnen Precision Honing Machine hones every internal diameter from .120" to 2.625" in steel, cast iron, aluminum, bronze, carbide, plastic, ceramic or glass.

Accuracy is guaranteed within .0001"—and a complete range of stones is available to produce any micro-inch finish desired. In hardened steel a finish of 2 to 3 micro-inches can be obtained.

Can be set up to operate in less than one minute — corrects errors of out-of-round and taper — does not require skilled labor — easy to operate and low in cost.

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SUNNEN PRODUCTS COMPANY

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Canadian Factory: Chatham, Ontario

in some special applications where oils of very light viscosity must be used at elevated temperatures.

Pour Point is not important for average hydraulic systems, unless used in low temperature equipment.

Carbon Residue is a measure of the carbon remaining in an oil after volatilizing. This figure is a hold-over from old "specs" supplied for mineral oils; as applied to hydraulic oils, it has little significance.

Emulsion tests—often affected by additive treatment—likewise are not of great importance in hydraulic oil evaluation.

Neutralization Number is more important, as it points to possible future trouble in continued use, if it increases too rapidly. It denotes the amount of acidity or alkalinity present in the oil. It usually runs between zero and 0.1. If higher than 0.1, an untreated oil will often tend to deteriorate more rapidly in use than one which has a low neutralization number.

Now, having considered the data which original specifications provide, as against the other, more important factors which affect service and which are not revealed in "specs", it should be

clear that hydraulic oils need more thorough evaluation than merely buying by routine specification. That is why plant men are more interested in what the oil will do in service.

Here are the "musts" and "must nots" which a good hydraulic oil should meet:

1. It must be of the correct viscosity to provide the right seal so that working pressures can be developed and maintained.

2. It must have a high Viscosity Index to resist changes in fluidity as temperatures change.

3. It must not permit wear on working parts.

4. It must not foam.

5. It must be stable, resisting oxidation.

6. It must not precipitate gums or sludges on working parts.

7. It must not have a corrosive effect on metals.

8. It must retain all of its original properties in use.

9. It must have a long service life.

For want of some of these properties, the hydraulic oil used in an expensive mechanism can shorten the life of equipment and spoil fine work.

Because it is not easy for the indi-

• • •

Sludge taken from hydraulic system of machine tool which had to be overhauled after a short run due to lack of oxidation resistance of the oil.

• • •

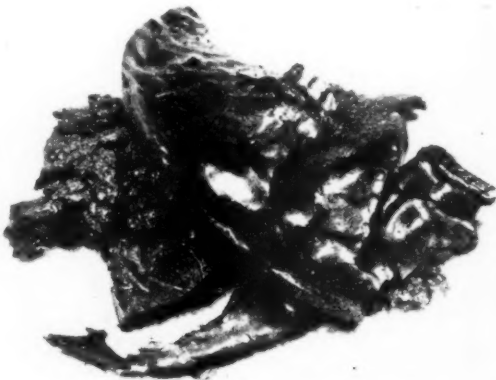


TABLE I
CONTINENTAL OXIDATION TESTS

Sample	"A"	"B"	"C"	"D"	"E"
Original S. U. Vis. at 210° F.	51	53.5	51	50.5	53
Final S. U. Vis. at 210° F.	54	60.5	57	55.2	55.5
% Increase in Viscosity	5.9	13.1	11.7	9.3	4.7
Original Neut. No.	0.084	0.028	0.056	0.056	0.028
Final Neut. No.	0.74	2.0	1.42	0.96	0.56
Original Carbon Residue	0.15	0.16	0.24	0.10	0.15
Final Carbon Residue	0.64	1.15	0.87	0.64	0.31
Naphtha Insolubles					
(a) 10 mg. point (hours)	13	18	3	26	48+
(b) 100 mg. point (hours)	48+	48+	25	48+	48+
(c) Final Insoluble mg./10-gram sample	92.6	54.0	183	27.2	69

Sample "B" is an oil obtained from a mixed base on Mid-Continent stock and has been subjected to a heavy acid treatment and clay filtering. Sample "E" is the same oil as Sample "B" to which has been added 0.15% of an oxidation inhibitor. The effect of the inhibitor on increasing the stability of this oil as measured by this oxidation test is shown by the lower percentage of increase in viscosity, final neutralization number and naphtha insolubles obtained with Sample "E".

The five samples given in Table No. 1 would be rated with respect to potential oxidation stability as follows on the strength of these tests:

1. Sample "E".
2. Sample "D".
3. Sample "B".

4. Sample "A".
5. Sample "C".

• • •

vidual plant man to evaluate all these factors in advance, and because mere specifications will not reveal them, it, therefore, seems logical that he should rely on a responsible oil supplier in

whom he has confidence. That firm, if it has studied hydraulic oil applications, can be of far more help to him than will a set of specifications which merely describe the unused oil.

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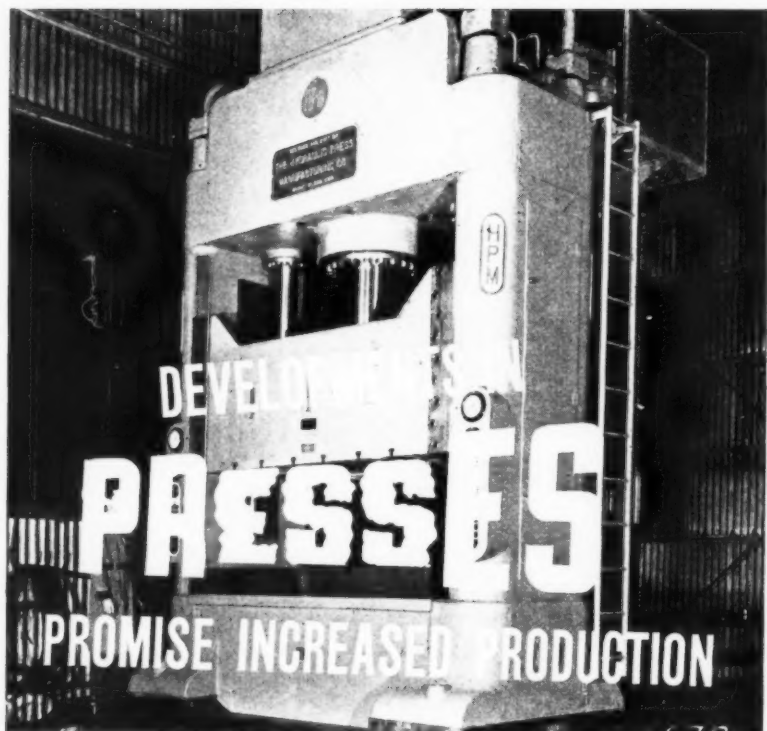
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According to Tom J. Smith, Jr., President of the Pressed Metal Institute, the pressed metal industry is today facing the greatest opportunity in its history. Revolutionary developments in presses, die and tool design, mechanical handling of stampings between press operations,

and the great increase in "know how" by pressed metal engineers opens up many new possibilities for the industry.

Government statisticians contend that a 30% rise in production per man-hour is possible provided full advantage is taken of the technological advances of the past five years. This means that manufacturers must modernize their plants and replace obsolete equipment with new to achieve low-cost mass production; further, designers must give fundamental consideration to production problems, and press manufac-

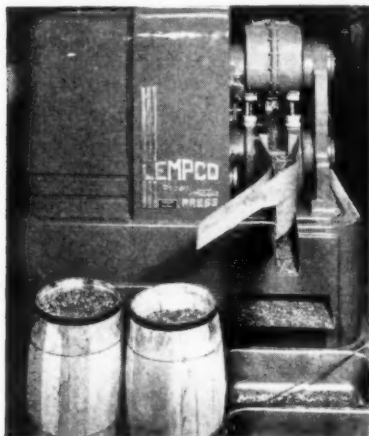
turers must provide top-notch equipment.

Recent improvements in the design of mechanical presses, in press controls, in tools and in methods of handling raw materials have made possible increased production rates, lower costs, greater accuracy, less down-time, higher efficiency, increased flexibility and greater protection to workers.

Improvements in press design include reduction of deflection, higher speeds, greater precision and faster acting controls and enable faster tool setting, ensure longer life of clutch, brakes and pumps, and make use of built-up type frames. Greater effective bed area, and easier repairs, also result.

• • •

10 to 50-ton speed press which attains a speed of 1,800 strokes per minute. In the illustration 10-24 hex machine screw nuts are being produced at the rate of 1150 per minute. Instead of a reciprocating action this press describes a rotary motion in actuating the dies. (Lempco Products, Inc.).

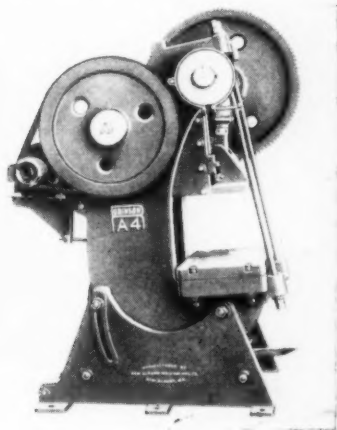


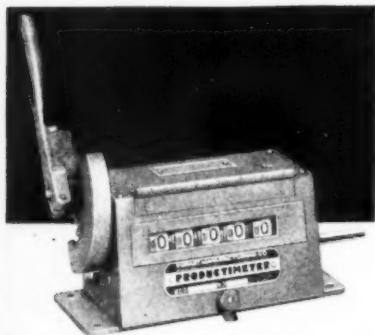
High-speed presses are of major importance for blanking, piercing and shallow draw operations. By using multiple dies, a production of 10,000 pieces per minute has been obtained. Some high-speed mechanical presses of 50 ton capacity are now available for operating at speeds of 800 to 1000 strokes per minute. They may be equipped with feed rolls utilizing coil stock to permit continuous operation. The controlling factors in high-speed press work are the nature of the job and the metal used. For presses operating at high speeds, solenoid valves controlling start and stop operations, with finger tip control, are being successfully employed.

By adopting basic changes in design of large presses, as, for example, weld-

• • •

Main bearings have been increased up to 15 per cent to reduce bearing pressure. Inclining mechanism is of screw type at back of press. Capacity at bottom of stroke, 56-tons. Flywheel press attains 90 strokes per minute. (New Albany Machine Mfg. Co.).





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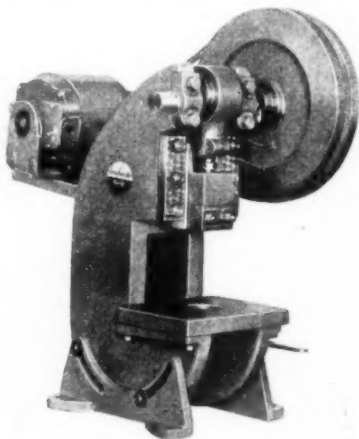
Providence 3,
R. I.

ed steel construction, replacement of the conventional crank shaft by eccentric drive shaft providing slide with double guides from crown and gibs, have eliminated many difficulties. Further improvements are running rotating parts in a bath of oil, clutch and brake precision and improved hydro-pneumatic cushions. The greatest sources of trouble to press users—broken crank shafts, burned-out bearings, power loss at the clutch, tilting of pressure pads or slides under heavy load and similar problems have been overcome.

In the all-welded steel press main members—crown, slide, bed and up-rights—are fabricated from steel plates of various thicknesses, properly designed and welded together. There are many advantages in using this type of construction. For instance rolled sheet is a homogeneous material; consequently no allowance is necessary for blow-

. . .

4-ton inclinable punch press. 285 strokes per minute. (Benchmaster Mfg. Co.).

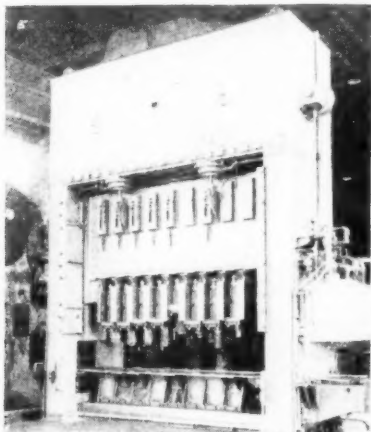


holes, sand inclusions and other defects common in any cast material. In a welded construction, metal can be of ample strength and need not be unnecessarily bulky to meet casting requirements. Total weight can therefore be kept at a minimum.

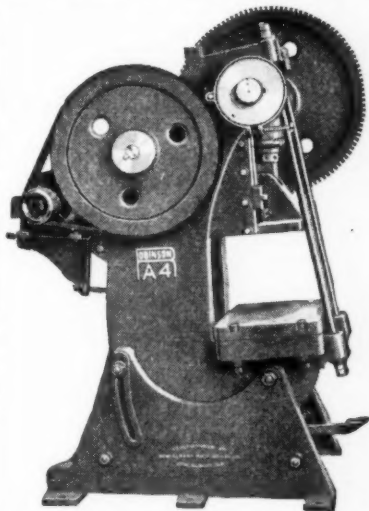
Advances in hydraulic press design have been even more rapid than improvements in mechanical presses. Before the war, hydraulic presses could hardly be called high production machines due to their comparatively low speeds. They were used primarily where mechanical presses were unsuitable, as for example, on operations involving deep draws.

Today hydraulic presses are available at speeds comparable to mechanical presses. Major developments in hydraulic presses include use of large pumps, new types of faster acting valves, simplified and improved air-ballasted accumulators. The use of

9 station progressive die in large press.
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The most efficient method of stamping numbers into metal. Repeats the same numbers until changed. Model 70 NUMBERALL Machines are used in all industries to mark various parts. Stamps numbers, etc., quickly . . . neatly. Perfectly aligned. Much better marks are produced by these machines than by single stamps or steel type, and at a far lower cost. Shank for Hand or Press and with any number of wheels from 3 to 20. Model No. 70

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Improved Type Holders, Hand or Press Style. Super Quality Steel Type.

Type is easily, quickly loaded and unloaded. Simplest construction. A pin holds the type securely. No screws nor springs. Made in various sizes: 1/32" to 1/2" figures and letters.



Steel
Type

Write for
Literature
BB7

Model
23H

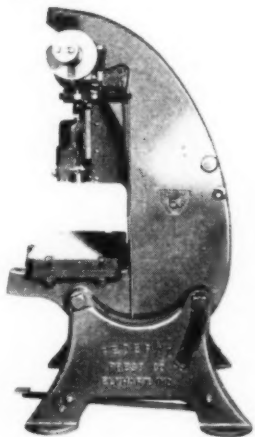
NUMBERALL STAMP & TOOL CO.
HUGUENOT PARK STATEN ISLAND 12, N. Y.

housing type frames, higher speeds and more efficient material handling devices are also notable.

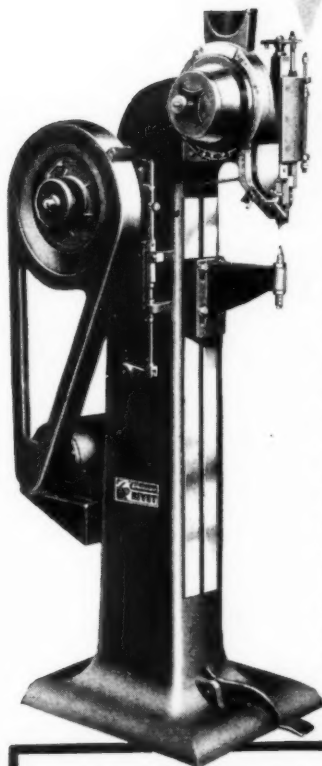
The new high-speed hydraulic press with self-contained pump resulted in the wide use of the hydraulic presses in metal forming and drawing fields. The housing type of design produced a "pre-loaded" press with deep gibs to take the side thrust, heavy housings to take 2 "pre-loading" and to carry torsional strains.

Shockless operation at fast rates of reversal were developed by means of specially designed valve controls, electrically operated, with a minimum loss of time through valve action during each cycle. Fast operating speeds up to 2500 feet per minute advance and return, and 800 to 900 feet per minute pressing are thus achieved. Production rates up to 20 pieces per minute on deep-draw work of single action type, and up to 10 pieces per minute on deep draw work of double action type

New non-repeat clutch mechanism insures single-stroke operation. Positive control belt prevents use of tools and operator from leaving his position. (The Federal Press Co.).



FASTENING HEADQUARTERS IS *Chicago Rivet*



When you want information on automatic rivet-setting or help with any production fastening problem, call on Chicago Rivet. Here, 26 years' fastening experience is at your disposal. Chicago engineers have lowered assembly costs and improved the products of hundreds of manufacturers.

Free FASTENING CLINIC

Send us a drawing or unfastened sample or sub-assembly of your product. We will gladly analyze your fastening needs, recommend the type of rivet and Chicago Automatic Rivet-Setter to do the job best, and submit estimated production rates. No charge or obligation.

Model 121 Chicago Automatic Rivet-Setter

CHICAGO RIVET & MACHINE CO.

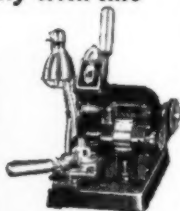
9610 W. Jackson Blvd., Bellwood, Ill. (Chicago Suburb)

Automatic Rivet-Setters • Tubular and Split Rivets in all Rivet Metals

CR-2

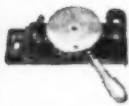
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Rouse
**HAND
MILLER**



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that Speed Pro-
duction.



It's a high-speed, motor-driven unit that has many uses in finishing operations for light cuts on aluminum, brass, steel and other metals... also, rounding and burring steel and cast iron. Inexperienced operators quickly learn to use it with speed and precision.

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AND COMPANY**

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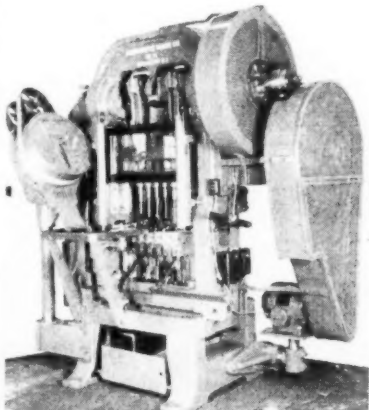
have been reached. Coining and marking production rates of between 30 and 35 pieces per minute are possible.

Hydraulic presses of the housing type have been developed in double action presses operating at the same speeds as deep draw mechanical presses. These presses produce a more uniform draw because of the constant speed of the draw and controllable blank-holder pressure. The presses can be equipped with auxiliaries such as liftout in bed, knockout in slide, cap in slide and cushion in bed.

The present high-speed hydraulic press is now being efficiently used on the production line for three shift service. As it provides flexibility as to length of total stroke and pressing

• • •

70-ton double crank drawing and re-drawing press. Automatic hopper feed friction dial that carries cups under first draw. Press has four draw dies and one ejecting stem. Ferracute Machine Co.).





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Easy, positive power transmission is often the key to an efficiently operated plant. And, as a logical conclusion, power-without-waste is one more way to cut costs. This carried out a step farther, is still another avenue to better profits. So—for lower costs and better profits through more economical power—install . . . use

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Some of the features which work for your satisfaction:

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such as STEEL, IRON, BRONZE, ASBESTOS
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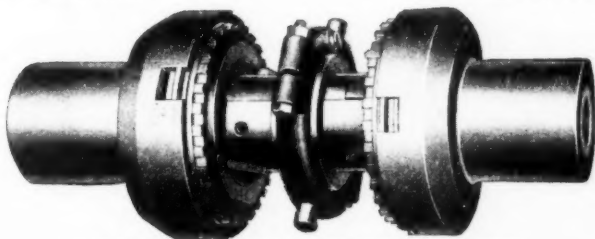
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ILLUSTRATED: CONWAY DOUBLE-THROW CLUTCH

stroke, speed of operation, and pressure adjustment, it is ideal for short run work, the die setting time being considerably less than on other types of presses. Hydraulic presses are now available in capacities ranging up to 5000 tons; larger ones are promised.

The use of hydraulic and mechanical presses for hot press forging has developed rapidly. They are being used to produce press forged parts from steel as well as aluminum. Forgings can be produced on presses at a fast rate and with a high degree of accuracy.

Stamping engineers state that proper flow of metal produces a fibre structure of maximum strength. As the flow of the metal can be better controlled in presses, no distortion of metal or damage to grain structure occurs. When the die design and preparatory

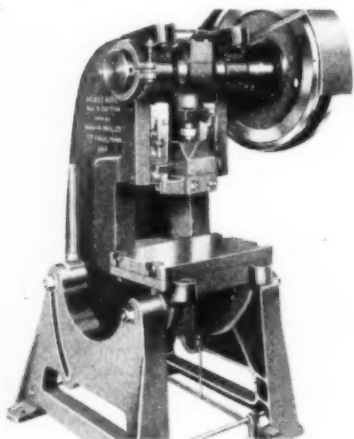
blocking operations are properly executed, high strength, quality forgings are produced on presses. Press forgings also save material because the "tong-hold" is eliminated and less allowance for machining is necessary. The "tong-hold" alone may amount to 15% of total weight of the forging.

Faster production, less maintenance cost, less "down time", lower die costs and use of mechanical feeding devices are all factors in the rapidly growing interest in press forgings.

Power presses surpass all other machines in longevity. Many presses over 75 years old continue to operate efficiently. A survey recently conducted by the Pressed Metal Institute disclosed that more than 30% of mechanical presses in the plants surveyed were over 20 years old. Barring abuses, a

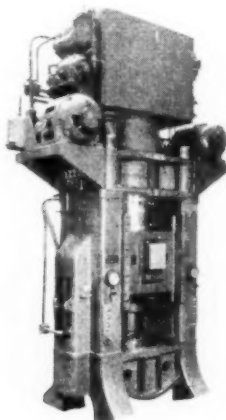
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Accurate 30-ton single stroke or continuous action press. Special ways on ram are adjustable with dial indicator for precision stamping. (Sales Service Machine Tool Co.).



• • •

350-ton special purpose press. Housing type construction with deep gibs and special heavy push-back cylinders for high stripping pressures. Twin construction of motor drives. (Elmes Engineering Works).



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A - Magazine for dry graphite, B - Ducts to bearings, C - Spindle bearings, D - Safety hood. There's also a plain type and selection of cutting heads available.

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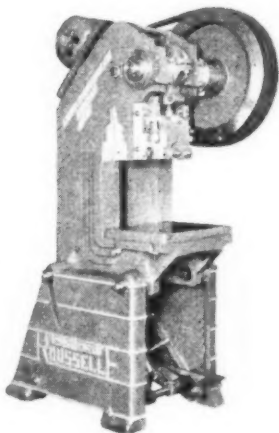
Write

for complete details and prices

press may be expected to become obsolete in comparison with improved designs long before its actual mechanical death under the scrapper's hammer. During its usefulness a press may make its way from the large modern shops down through small or specialized plants over a great many years. The cost of operating a machine that is "old" in years and physical condition involves time and material lost through imperfect products, breakdowns and irregular, noisy, dangerous performance. When worn and improperly adjusted presses are used, excessive tool wear and breakage may be anticipated. The slightest excess of tool deflection beyond the limits of normal operation becomes apparent in rejects, in the frequency of tool grindings and in chipped or broken punches and dies. Worn shaft or crank-pin bearings, connection

• • •

25-ton press Crankshaft assembly and bearing blocks easily removed. Roller bearing flywheel. Clutch uses round clutch pin made of chrome nickel alloy steel. (Service Machine Co.).





END HIGH-SPEED GRINDING TROUBLES

WHAT HAPPENS when temperatures rise on tough metal finishing jobs?

... Searing heat scars, injures metal surfaces. Production slows.

... Glue on belt softens; abrasive is wiped off. Cloth backing is weakened by intense surface heat. Belt replacement is soon required.

SILVER STREAK metal working belts are *insulated* — stand up under terrific grinding temperatures. Result: —

... Greater production speeds

... Belt replacements are sometimes cut as much as 400%.

SILVER STREAK and JEWELOX (aluminum oxide) belts are finished by AP's exclusive Velvet Joint process. They lie smooth, never bump or jump under the work. Try one of these famous belts... see for yourself. Phone your jobber or write to Abrasive Products, Inc., 527 Pearl St., South Braintree, Mass.



Abrasive Products, Inc.

SOUTH BRAINTREE 85, MASSACHUSETTS — MAKERS OF JEWEL COATED ABRASIVES

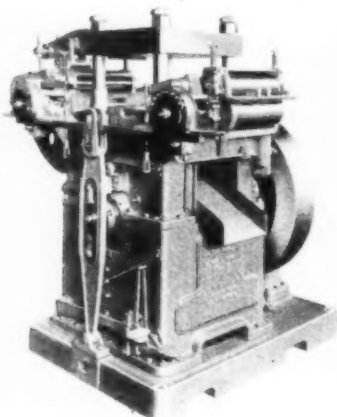
seat bearings, gibs, slide-ways, bent shaft or connection screw, a worn clutch or brake, a sprung, cracked or otherwise misaligned frame—all these factors injure valuable press tools, which often cost as much or more than the press itself.

Losses involved in the use of presses that are "old" in comparison with more

recent designs must be appraised by the individual manufacturer who should be familiar with the most recent offerings of machine suppliers. Quite often, even a small shop will discover advantages in the application of a special or fully automatic machine while re-

• • •

50-ton dicing machine equipped with automatic double roll feed, adjustable scrap cutter attachment and variable speed drive. (Henry & Wright Mfg. Co.).

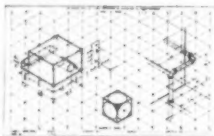


50-ton hydraulic inclinable press capable of 100 strokes per minute. Semi-automatic or full automatic cycle can be selected at the control station, with a pneumatic control circuit for smooth operations. (The Hydraulic Press Mfg. Co.).



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Immediate Delivery
on standard sizes
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taining semi-automatic or manual methods for certain operations. There is no hard and fast rule governing a press builder's recommendations regarding equipment for a given job. Press builders' engineering departments are good clearing houses for solution of trade problems. Reference of a production plan to such engineers may result in radical and profitable departures from procedures considered standard. Such departures may involve completely new equipment, or simply the addition of auxiliary equipment. With constantly rising wage rates, the labor factor in relation to total cost has increased to levels undreamed of ten years ago. Thus, if a press is turning out fifty pieces per minute and the job could be handled on more modern equipment at the rate of one hundred and fifty pieces per minute, resultant increased labor costs represent a far greater proportion of total product cost than they did ten years ago.

With modern automatic presses it is possible to turn out finished pieces at each stroke of the press which formerly required several presses often operating at slower speeds. Auxiliary press equipment has also contributed to more economical operation. For example, suitable use of automatic reels and straighteners frequently makes possible increases in press speeds and reductions in labor costs. General adoption of individual V-belted or direct motor drives has displaced cumbersome line-shafts and miles of flapping flat belts. Die space areas are more accessible than ever before. Inching mechanisms, counter-balance and improve brakes for heavy slides and dies have eliminated many hazards and reduced set-up time. Automatic and semi-automatic lubrication systems have simplified maintenance. Presses of improved design are smaller, trimmer, stronger and better guarded.

New clutch mechanisms of both posi-

M·B *MODEL HD-CR*
40,000 RPM



"HEAVY DUTY" Pneumatic
GRINDER

A powerful, versatile tool—can be fitted with three different spindle noses to handle mounted wheels with $\frac{1}{4}$ " diameter shanks, also unmounted wheels with $\frac{1}{4}$ " diameter and $\frac{3}{8}$ " diameter holes. Made with compound rotors, an abundance of power. Fitted with steel body, a real safety feature. Special grease-sealed bearings, no lubrication required. Prompt Deliveries.

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WITH
BARTELT
GAGES



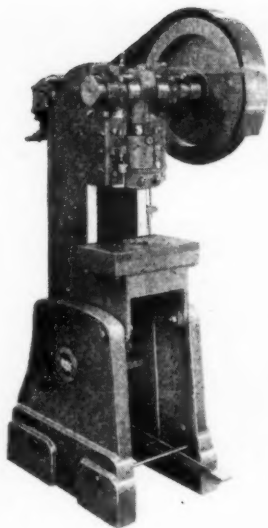
Use a Bartelt Pedestal Micrometer for setting boring tools and for many other shop operations requiring accurate positioning relative to fixed base. Make settings in one step—eliminate cut-and-try methods. Model B, with reversible slide, shown. Write for literature describing all models.

BARTELT ENGINEERING CO.
1218 Partridge Ave.
Beloit Wisconsin

A heavy duty, all steel weldment frame press for blanking, perforating, drawing. Speeds up to 175 R.P.M. for progressive die operations. (U. S. Press & Tool Corp.).

• • •

tive and friction types permit faster and quieter operation. Numerous variations on the simple harmonic crank or eccentric shaft motion, and great strides in the design of hydraulic systems, have resulted in mechanical and hydraulic presses specifically suited to jobs formerly considered very difficult or impossible. High speed precision feeds are making possible material transfer at a rate commensurate with the top operating speeds of the presses themselves. Vibration dampening foundations and greater rigidity of press frames have kept pace with other developments to maintain tool life un-



SERVING INDUSTRY 62 YEARS TURNINGS CRUSHER

Advantages • • •

1. CRUSHES your curled turnings... thus reducing bulk volume by 80%
2. Enables you to extract cutting oil from turnings.
3. Permits faster and easier briquetting
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Cut-away view showing Hopper, Cutting Rotor, Tramp Metal Catcher

Ideal for the regrounding of welding flux waste.



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CRUSHERS
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CRUSHER and PULVERIZER CO.

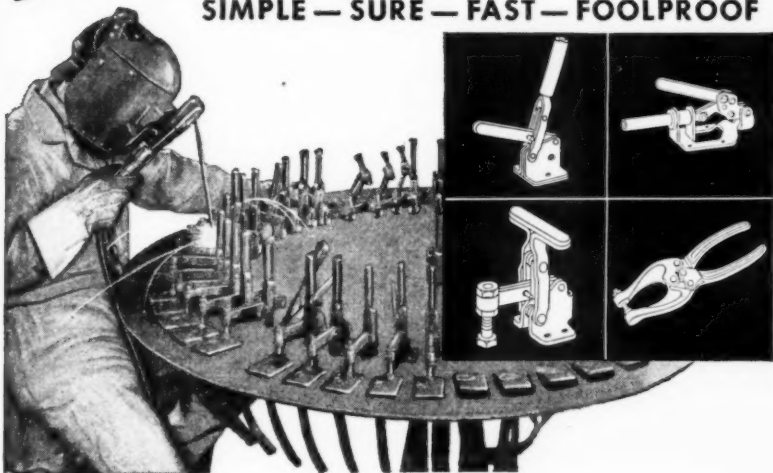
2915-17 North Market St., ST. LOUIS (6), MO.

der increasingly severe conditions. Electric controls and safety devices make press operation easier and safer than ever before.

Efficient presses are essential for the production of precision stampings. It is only through the use of proper press, tools and auxiliary equipment that high quality stampings can be manufactured at minimum costs. Conferences between press designers and stamping engineers is vital to the solution of many production problems that confront the industry. Although advances during the past few years in design of mechanical and hydraulic presses have been marked, it is believed by press engineers that even more spectacular developments will be perfected during the next few years.

SMART TOOLING!

SIMPLE — SURE — FAST — FOOLPROOF



Here's efficient tooling based on the quick action and positive holding power of De-Sta-Co Toggle Clamps. This simple turntable with its 48 No. 210-S clamps enables one welder to keep abreast of two helpers. One places curved shank in socket and unloads finished assemblies. The other locates pierced hole in plate over shank and locks securely with toggle clamp. The expert welder works without interruption.

Smart tooling like this is the backbone of modern mass production technique. You'll see De-Sta-Co Toggle Clamps playing a similar vital part *wherever* the principles of sound tool engineering are observed.

Welding production is *only one* of the many fields for quick acting clamps. For holding parts in milling, drilling, routing, riveting, cementing—for fast, uniform, *foolproof* action—progressive tooling demands De-Sta-Co adaptability and quality. There's a De-Sta-Co clamp for every job, designed and built to stand up under the wear and tear of volume production. Send for copy of Catalog No. 47.

DETROIT STAMPING COMPANY

347 Midland Ave.

Detroit 3, Mich.

Letter from England



ROBERT HUTCHESON, Editor
MACHINE SHOP MAGAZINE (London)

The quarterly luncheon of the Gauge and Tool Makers' Association was held on the 10th July when, as was forecast in my last letter, the guest of honour was the Rt. Hon. Lewis W. Douglas, your Ambassador to this country. The luncheon had a large attendance and Mr. Douglas's address was extremely well received. In organizing these lunches the aim of the Association is to invite a well-known personality in industry, politics and other fields to address the members; Mr. Douglas is the first guest of honour to come from overseas, and he certainly charmed everyone present by his very well delivered address and his friendly manner.

* * *

This letter is being written while I am touring some of our Midlands and North Country industrial centres such as Sheffield, Leeds and Manchester. Machine tool makers and other engineers whose products involve the use of iron castings continue to complain about the critical foundry position. Large iron castings are still in extremely short supply although some firms are having less trouble in getting smaller castings. The general shortage is due in no small measure to the continuing shortage of coal, but the unbalanced supply of light and heavy castings is due to some extent to the reluctance of moulders to undertake a heavy floor moulding when they can do lighter machine moulding which often pays a better bonus. Just what is the answer to this is not clear since it appears to be very doubtful whether higher wages would be considered adequate recompense for the

heavier and much more skilled and responsible work.

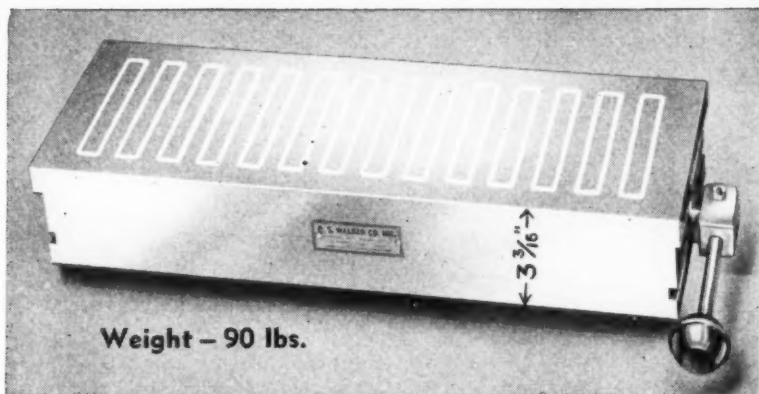
Additional troubles arise from the fact that many castings supplied are not up to normal standards so that often the size of a batch of castings proves to be somewhat of an illusion when some of the castings prove faulty.

* * *

Sir Edward Appleton, G.B.E., K.C.B., F.R.S., Secretary of the Department of Scientific and Industrial Research, said recently that the British Scientist succeeded in war-time not only because he wished to serve his fellow countryman in the Armed Forces, but also because he was stimulated by the constant challenge from the use of his results to his professional pride and skill. Sir Edward was speaking at a lunch in London to celebrate the opening of the new laboratories of the British Scientific Instrument Research Association, at Chislehurst, Kent.

He said that the scientific instrument industry was situated at the corner of a triangle, the other corners being occupied by science and by the users of instruments. From the development of science came the warp and welt from which the fabric of instruments was made. From user needs came the prompting of definite objectives. It might be a graticule, a quantitative aid to vision which played an important part in the war, or it might be a carbon-dioxide recorder to control the breathing of apples on shipboard during their long journey from the Dominions to the Mother Country.

It was a good thing for a research or-



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See the newest WALKER DEVELOPMENT—the lightest permanent chuck ever produced (90 pounds) and only 3-3/16" high. This new development gives you headroom never before obtainable, together with increased holding power due to fine pole division. The new WALKER magnetic chuck gives you wider scope of production on either light hand-operated or power-fed machines.

Walker Chucks are modern

O. S. WALKER CO. Inc.

WORCESTER 6, MASSACHUSETTS

Original Designers and Builders of Magnetic Chucks

ganization to have such stimulation from the user. In its move toward greater efficiency, British industry would make more exacting demands on the ideas and products of the British Scientific Instrument Research Association. He was confident that this challenge would be courageously and strenuously accepted.

* * *

Addressing the workers of David Brown Tractors Limited at Meltham recently, Sir Stafford Cripps (President of the Board of Trade) said the Government was hoping to be able to import more steel towards the end of the year.

"One way in which we can get maximum production in agriculture is by giving farmers as much up-to-date machinery as possible, and that means tractors and all the implements that go with them," he said.

"You have done a very good job here indeed in producing implements, and I am glad to know that production is going to be expanded both of tractors and implements as soon—and we hope it won't be long—as we can get more steel supplies."

Unfortunately we and the rest of the world were short of steel. Before the war we used to import a considerable amount of steel, but now the countries from which we imported it needed the steel for themselves.

"We are still trying very hard to get imports wherever we can," continued Sir Stafford, "and we are hoping towards the end of the year to get more imports of steel that will enable manufacturers to expand and meet the great demand for their productions."

"So if for some time you seem to be held back by the shortage of supplies, don't blame the management and the Government; it is something which cannot be helped. We are all trying our best to expand the steel supplies in the country, but the truth is that more steel is needed to rehabilitate the world than the world can make."

* * *

* The Distribution of Industry Act, designed to bring employment to the Development Areas, came into operation two years ago. The work undertaken by the Board of Trade under the Act has in-

volved the acquisition of land, conversion of Royal Ordnance factories, allocation of surplus Government Factories, negotiations with 2,000 industrialists and the placing of a considerable number of contracts.

The following report shows the progress which has been made notwithstanding shortages of essential building materials.

Government-financed building of new industrial estates and other sites is proceeding on 120 sites totalling 2,297 acres of which 26—(558 acres)—are in the North East (including 2 new estates—176 acres), 57—(669 acres)—in Wales (including 1 new estate—230 acres) 11—(84 acres) in West Cumberland, 24 (933 acres) in the Scottish Development Area (including 10 new estates—734 acres) and 2 (53 acres) in the South Lancashire Development Areas. Civil Engineering contracts placed amount to over £2,000,000.

Negotiations for the purchase of 40 further sites totalling 551 acres are in hand. Of this total 18 will shortly become available.

Sixty new factories with a total area of 1,583,000 sq. ft. have been completed for tenants who are in occupation. 18 are in the North East, 21 in South Wales, 8 in West Cumberland and 13 in Scotland. They will provide employment when at full production for over 10,000. Most of the manufacturers have only just started production but employment has already reached about 4,000.

A further 41 factories, with a total area of 1,532,000 sq. ft. are nearing completion and will employ at full production 10,000 people.

12 (309,000 sq. ft.) are in the North East.

7 (399,000 sq. ft.) are in South Wales.

3 (72,000 sq. ft.) are in West Cumberland.

19 (752,000 sq. ft. are in Scotland.

In addition to the building of factories, Government action under the provisions of the Distribution of Industry Act for the rehabilitation of the Development Areas includes the improvement of basic services (e. g., roads and bridges, sewage, water, gas and electricity supplies). The Board of Trade have made special arrangements in collaboration with the Ministry of Health for the provision of houses for key work-

The SUPER METHOD



of TRIMMING FORMED PARTS
and performing a host of
other metal cutting jobs!

The negligible down-drag and the ability of Tannewitz High Speed Band Saws to cut sheet metal from 90° to near 0 or 135° at tremendous speed make these machines ideal for trimming. Cuts can be made with perfect safety without using a rest of any kind. Friction sawing with Tannewitz High Speed Band Saws also results in perfectly amazing time savings in the cutting of flat sheets, soft or hardened steels, armor plate, plastics, glass and many other materials. Whatever your cutting problem, chances are it can be done better and faster with Tannewitz Band Saws. Investigate this "Super" method of cutting.



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FRICITION SAWING with

Tannewitz

HIGH SPEED BAND SAWS

THE TANNEWITZ WORKS

**GRAND RAPIDS
4, MICHIGAN**

ers in connection with the establishment of new industries in the Development Areas. They are also dealing with the clearance of derelict land, not only for purposes of industrial development, but also for the improvement of the amenities of the Areas; the Board are, with the consent of the Treasury, making grants to local authorities for the carrying out of this latter work.

* * *

A few days ago Mr. Herbert Morrison, Lord President of the Council, announced the composition of the new Planning Board that has been instituted to advise the Government.

In addition to its Chairman, Sir Edwin Plowden who is styled Chief Planning Officer, the Board will consist of:—

Sir William Henry Coates, 65, a deputy chairman, Imperial Chemical Industries (nominated by Federation of British Industries and British Employers Confederation).

Sir Graham Cunningham, 55, chairman of Triplex Safety Glass Company, war-time Controller General of Munitions Produc-

tion (nominated by F.B.I. and B.E.C.)
Mr. Andrew Naesmith, general secretary, Amalgamated Weavers' Association (nominated by T.U.C.).

Mr. W. R. Verdon Smith, 34, a director of Bristol Aeroplane Co. (nominated by F.B.I. and B.E.C.).

Mr. J. Tanner, President Amalgamated Engineering Union (nominated by T.U.C.).

Mr. H. V. Tewson, 50, general secretary, T.U.C.

Sir John Woods, 52, Permanent Secretary, Board of Trade.

Sir Godfrey Ince, 56, Permanent Secretary, Ministry of Labour; war-time Director-General of Man-Power.

Sir Archibald Rowlands, 55, Permanent Secretary, Ministry of Supply.

Mr. A. S. Le Maitre (Central Economic Planning Staff).

Mr. H. T. Weeks, former head of planning Ministry of Aircraft Production.

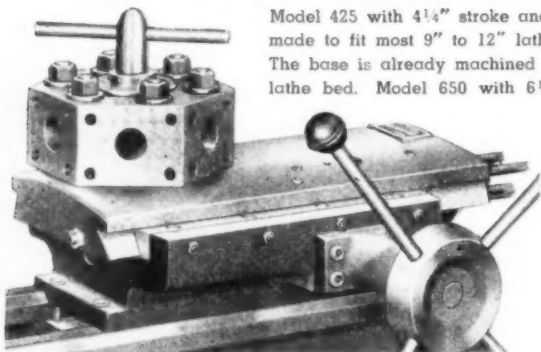
Mr. F. W. Smith, 51, former director of building materials, Ministry of Works.

Mr. R. L. Hall, 46, former Director Economic Section, Cabinet Office.

The Board thus represents the employer

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For 9" to 12" and 12" to 16" lathes.



Model
425

Write for illustrated folder and prices. See it at National Machine Tool Show, Chicago, Booth 648.

Model 425 with 4 1/4" stroke and 1" tool hole capacity is made to fit most 9" to 12" lathes without extra charge. The base is already machined for the vee or flat of the lathe bed. Model 650 with 6 1/2" stroke and 1 1/4" tool

hole capacity fits most 12" to 16" lathes. The tool holes, of course, are finish bored after mounting on the lathe. Make a dual purpose machine out of your lathe with a

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and the employee classes, but doubts have been expressed by some Members of Parliament as to whether small firms are adequately represented in view of the fact that the employer class of members are all associated with the larger industrial organisations.

Mr. Morrison's reply to this was that selection of members of the Board had been done in consultation with two of the biggest of our trade associations namely, the Federation of British Industries and the British Employers Confederation, and there were serious practical disadvantages in the operation of a large body.

Industrialists will look with interest at the work of the Board which will act in an advisory capacity only, without executive powers to see that their recommendations are carried out.

* * *

At the annual general meeting of the Manufacturers of Arc Welding Electrodes it was revealed that the sale of electrodes during the past year in the home market dropped to about half the maximum home

sales in 1944. This is 80% more than the home sales in 1938 and 24% more than in 1939 as is shown by this summary:—

1938	1944
385,571,000 ft.	1,415,821,000 ft.
11,720 tons	45,020 tons
£1,060,320	£4,247,460
1945	1946
1,034,428,000 ft.	726,056,000
34,200 tons	21,300 tons
£3,103,300	£2,600,000

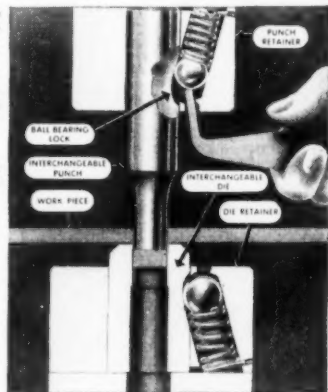
This drop is, no doubt, partly due to accumulated war time stocks of electrodes being used up during the year, but it is also partly a reflection of the extent to which the metal fabricating industries continued to use welding after the cessation of war time contracts.

It may be noted there have been considerable sales of arc welding plant in Great Britain during the past 10 years, and a steady increase in the number of welding points installed, and although the consumption of electrodes has arisen by about 50% since 1939 the quantity used annually by

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each welder has dropped sharply; or in other words, there are $2\frac{1}{2}$ times as many welders at work today as compared with 1938, but the consumption of electrodes has not increased proportionately.

Information from the Iron and Steel Federation indicates that the production of steel ingots will fall sharply during the next 12 months, probably to about $9\frac{1}{2}$ tons instead of the 13 million tons which had been anticipated, and this will have some effect upon the development of welding.

It is of interest to note that the trend of electrode production in the U.S.A. shows the demand to be proportionately following much the same lines as in this country. The production of steel in America fell by 16% during the past year, as compared with the previous figures, this drop being largely due to strikes; it is anticipated U.S.A. steel production during the current year will be higher.

The export sales of electrodes from Great Britain were almost exactly the same as for the previous year; export sales form 27.7% of the total figure being well in excess of those during the war years, and actually more than three times the 1938 export sales. There may be increased competition in overseas markets in future years.

Difficulties will be experienced in the forthcoming year in the supply of raw materials for electrode manufacture, and considerable pressure has been brought to bear upon the relevant Government officials during the past year, in an endeavour to ensure adequate supplies. It has been everywhere emphasised that the use of welding saves steel, and if steel users have any difficulty in obtaining supplies of electrodes they will fabricate by other methods, such as riveting or bolting, requiring a greater weight of rolled steel.

The various departments of the Board of Trade responsible for the different coating ingredients and packing materials have all been urged to provide the full allocation of the appropriate raw materials.

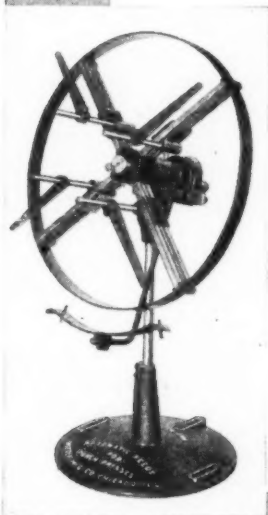
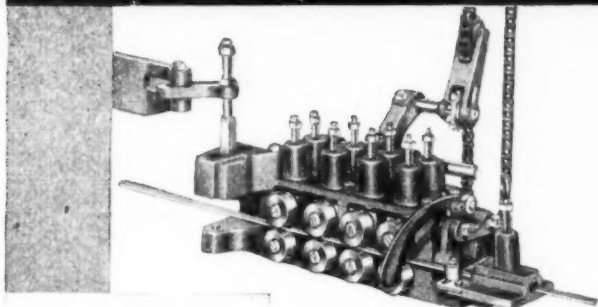
The Technical & Production Committee is giving particular attention to the preparation of welding text books, because it has

become apparent that the standard of welding education in Technical Colleges and Institutes is not high enough, mainly due to an insufficient number of properly trained instructors—particularly for theoretical subjects allied to welding—and a lack of suitable text books. It is probable that one of the biggest limiting factors hindering the development of arc welding as a manufacturing process is the shortage of welding engineers, and in particular the lack of engineers who are competent to design structures and fabrications for welding. Since the economies resulting from welded fabrications are not obtained unless work to be welded is properly designed, it is considered that a great deal must be done to improve the standard of welding knowledge amongst designers.

The Association continues to act as a centre through which users of the electric welding processes can obtain information. During the past year a number of enquiries have been received, particularly from overseas, dealing with particular applications of welding, or for general information on suitable types of welding plant.

In the foreseeable future it seems likely that any Government we have will retain some measure of central planning and control, and it is becoming apparent that we are moving towards a new conception of industrial organisation and the functions of industrial or trade associations—particularly in regard to the relationship between industry and the Government. Trade Associations must be able to carry out objective and factual surveys, because through them industry as a whole must keep the Government informed of the part which particular industries play on the National economic front. It would appear desirable to establish a bond of confidence with various Government Departments, so that they will allocate to the Trade Associations the general strategic tasks and a share of National resources, leaving it to the individual industries through their Associations to work out the detailed tactical moves. To voice these opinions is not to urge a move towards a corporative state, but is suggesting a logical organisation to ensure a flexibility and freedom of action in the circumstances in which industry has to work today.

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Personality More Important in Hiring New Engineers Than Scholarship Survey Shows

Answers to a questionnaire sent out last year to a selected group of employers. The basis upon which new engineers are selected, starting salaries, possible future in engineering are discussed.

When an employer engages a young engineer, he places first importance, not on scholastic record or on engineering experience, but on that intangible called "personality," according to a report just issued by the Engineers Joint Council thru its "Committee for Survey of Employer Practice Regarding Engineering Graduates."

A questionnaire was sent last summer to 174 employers of engineers. Replies were received from 104 of them. They represent colleges and 19 fields of industry including instrument, electrical, petroleum, chemical, aircraft, machinery, building, paper, glass, utilities, metal, coal, textiles, soap, rubber, automotive, transportation, shipbuilding and food. They employed a total of 2,000,000 persons of whom 40,000 are engineers.

The report is based on these replies. It is being made available to some 100,000 engineer readers in the April journals of the Societies making up the Engineers Joint Council: American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, The American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Institute of Chemical Engineers and National Society of Professional Engineers.

A questionnaire sent out last year to a group of employers. The bases upon which new engineers are selected, starting salaries, possible future in engineering, are discussed.

The committee which conducted the survey is composed of E. G. Bailey, Chairman, Vice President of The Babcock & Wilcox Company, representing the A.S.M.E.; Dr. L. W. Bass, A. I.Ch. E.; Col. William N. Carey, A.S.C.E.; F. B. Foley, A.I.M.E.; R. C. Muir, A.I.E.E.; William F. Ryan, N.S.P.E.; and H. T. Woolson, A.S.M.E.

In making public the report, Mr. Bailey said that it was prepared in the belief that it would be helpful to junior engineers, employers of engineering graduates, colleges and engineering societies. It is preliminary, he said, to a much wider survey recommended to begin next Fall. Also due soon is the report of the Council's "Committee on the Economic Status of the Engineer."

Personality Rated High

The question: "What are the Bases on Which Engineering Employees are Selected?" elicited the surprising response that "personality" came first among nine considerations listed, while "salary requested" came last. Weighing first, second and lower ranking choices as in preferential balloting, these rated as

ROLL-IN

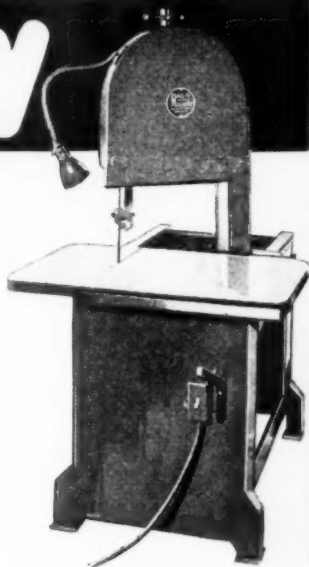
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follows:

1. Personality.
2. and 3. Scholastic record; indicated promise of development in specific field of engineering.
4. Engineering experience.
5. Evidence of ability to co-operate with others.
6. Recommendations by qualified persons.
7. Indicated promise for executive development.
8. Standing of college from which candidate was graduated.
9. Salary requested.

"Character" Desirable

The report adds that "perhaps the items were not the best that might have been chosen." In the "write-in" space, ten of the employers added "interest in assignment," two added "interviewer's evaluation," and three mentioned "character."

The report summarized the traits of a desirable engineer employee: "a well rounded out individuality with a good personality, qualified by education and experience to make a good engineer."

Small Per Cent Criticizes Colleges

A question: "Is the Present College Training of Engineers Satisfactory?" brought a vote of 83 per cent "yes" and 14 per cent "no." The critical 14 per cent listed the following lacks:

1. Lack of fundamentals; physical science and mathematics.
2. Inarticulateness in speech and writing.
3. 4 and 5. Lack of education in the humanities; lack of drafting and design experience; lack of knowledge of economics and business.
6. Lack of knowledge of operation and production.

The report compared these answers with those in a similar survey made by the Compton Committee of the S.P.E.E., for the American Telephone and Telegraph Company, in which 100 industries were surveyed. Asked: "What is

your opinion of the engineering graduate?" 12 per cent replied: "excellent or very good," 38 per cent said "satisfactory" and 35 per cent "deficient in certain particulars."

Need and Advantages for Engineers

The Engineers Joint Council report shows that 31 per cent of the total employees of the 104 industries surveyed are engineers. Individually the percentage varies greatly. The colleges included employ 44.6 per cent engineering graduates while certain industries, such as soap, automotive, food, shipbuilding, employ only .9 to .3 per cent engineers. An average annual increase of about 8 per cent in the number of engineers that will be employed in the next four years was estimated.

Fifty-nine per cent of the replies said that opportunities for future advancement of engineering graduates would be "greater than ever."

Median Starting Salary \$207 Monthly

"What is the prevailing policy in regard to starting salaries and advancement?" the questionnaire asked.

Twenty per cent of the co-operators indicated that every new engineer employee is regarded as a special case, and starting salary is based on his particular qualifications. The others were divided about equally between those who are influenced by prevailing rates of other companies and those who said that salary scales were reached independently.

No company reported a starting salary of less than \$150 and only four less than \$175. Five companies reported starting salaries of more than \$250. The median (50 per cent level) is approximately \$207 per month.

New Graduates Preferred

Other questions dealt with methods of hiring and recruiting engineer employees. Replies revealed the following facts:

Ninety-six per cent employ cadet en-

gineers directly upon graduation from engineering schools. Forty-three per cent hire more than half of their new engineer employees after one or more years' experience elsewhere. The report states: "This is evidently a matter of necessity or expediency rather than preference, because more than 60 per cent of those reporting indicate that they prefer to hire the new graduate."

Seventy per cent of those replying said they recruit cadet engineers by sending representatives to the colleges to interview students, and nearly all discuss the candidates with the faculty. Fifty-one per cent invite students to visit their plants at company expense.

"Other means of recruiting new graduates are apparently of little avail. . . voluntary applications, advertising, summer employment of students, employment agencies and recommendations of friends."

For filling specific openings with experienced men, advertising is used by 50 per cent, employment agencies by 35 per cent; 35 per cent also use the facilities of Engineering Societies Personnel Service Inc., with offices in New

York, Chicago, Detroit, and San Francisco.

Before hiring a candidate, 75 per cent said they rely chiefly on personal interviews with engineering executives. Twenty per cent also use aptitude tests. Several companies report that each candidate is interviewed by several responsible engineers, including the top ranking executive.

Opportunities Given Employees

Practically all who responded said that their engineering organization provides definite opportunities for professional advancement. Formal training programs are provided by 37 per cent; 65 per cent indicate that jobs are varied to provide a broad training; 41 per cent provide technical programs with the company; and 78 per cent encourage taking outside courses.

Society Membership Encouraged

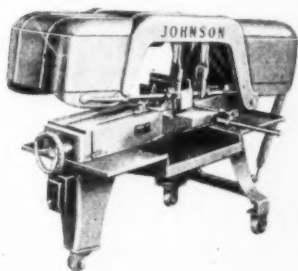
Practically all of the 104 surveyed encourage membership in engineering societies and nearly 30 per cent pay the dues of certain employees. Traveling expenses usually are paid for employees to take part in the programs of these societies.

JOHNSON WET MODEL BAND SAW

The Johnson Manufacturing Corp. announces a horizontal band saw, 10' x 18" capacity, for production cutting. This new wet cutting machine permits the handling of certain types of production work and higher speed cutting than is practical on the dry model Johnson Band Saw.

The Wet Model gives maximum cutting efficiency without impairing the simplicity of operation. Production can be increased on certain jobs by as much as 200% and this, together with longer blade life, allows the machine to do cutting jobs ordinarily performed on more expensive tools.

The coolant is a complete unit that operates continuously. Coolant flow plays directly on the cut, since the nozzle is fastened to the back of the front saw guide and needs no adjustment. The pump starts and stops automatically, as it is integral with the machine and is easily disconnected for dry cutting. A feature is the removable coolant recep-



tacle which can be pulled completely out and removed for cleaning and draining.

A copy of the new catalog describing the unit will be furnished on request by the Johnson Manufacturing Corp., Room 624 Chrysler Building, New York 17, N.Y.

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makes ALL THREE!

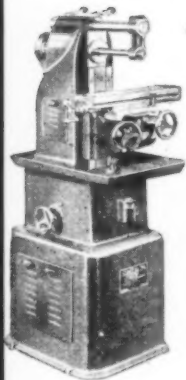
A size "0" Horizontal Milling Machine, an 11 $\frac{1}{4}$ " Precision Lathe, a 12" Shaper—each is a modern precision tool incorporating advanced engineering and operational features. Each is a precision machine tool that will work to the closest tool room tolerances. Each has the stamina to stand up to continuous full capacity operation without loss of accuracy. Each is a moderate priced tool, a logical "first" machine for the small shop—a profitable tool for augmenting large plants equipment.

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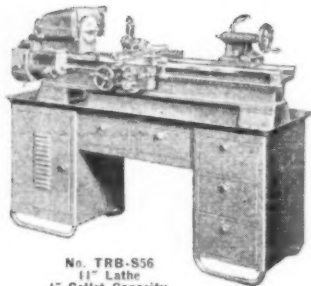
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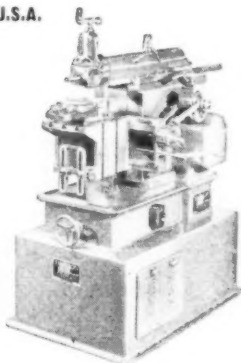
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No. 3000A
Size "0"
Milling Machine



No. TRB-S56
11" Lathe
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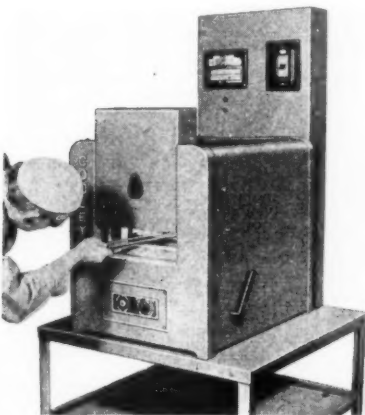
MACHINE and TOOL BLUE BOOK

September, 1947

WHAT'S NEW IN METALWORKING

300°—2000° F. TEMPERATURE RANGE WITH COOLEY ELECTRIC FURNACE

Capable of continuous operation at 2000° F. and providing highly accurate temperature control down to 300° F., the new Model VK-5 Cooley Electric Furnace is effective for a broad range of applications. Suitable for heat treating of small parts, tools and dies, this furnace heats from cold to 2000° F. in 1½ hours. Only half this time is required after overnight shut-down. Rapid and uniform heating of the 8"x6"x14" chamber is assured by six embedded-type heating elements, including one in the door. The power capacity is 4650 watts. Since only 2½ KW. are required to maintain 2000° F., ample capacity is available for heating whatever work is charged. The furnace draws 20.2 amperes at 230 volts.



The unit is equipped with the Cooley Selective Power Modifier. Used in combination with an indicating-controlling pyrometer, this unit permits meeting very

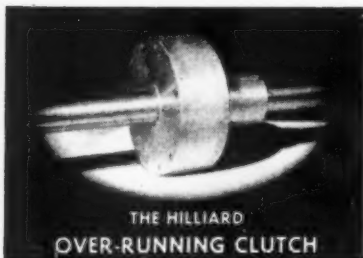
critical temperature requirements. Power input may be adjusted to balance furnace heat losses, and low temperature overshooting of the pyrometer is eliminated. Further, the modifier prevents the furnace from running to destructive temperatures in the event of pyrometer failure.

The modifier unit consists of a synchronous motor driven, cam-operated switch which can be selectively set to maintain the power from 5% to 100% of capacity; a dial control, relay and pilot light, all mounted integrally on the front panel below the door.

Either a wall mounted pyrometer or the illustrated control panel may be employed. Enclosed and self-contained, the latter is completely wired with Taco West "Veri-tron" electronic - operated pyrometer, breaker-type switch and fuses. When mounted with the panel and stand assembly, this furnace can be installed or moved anywhere by connecting two line wires.

The high maximum temperature of the Model VK-5 furnace makes it well suited for heat treating of stainless and air hardening steels, which have hardening temperatures well above those normally employed for heat treating alloy and carbon steels. It may be used efficiently for normalizing, annealing, carburizing and hardening in the range from 1200° to 2000° F. The unusually accurate regulation to as low as 300° F. makes it useful for tempering steel, heat treating non-ferrous metals such as aluminum and beryllium copper, and the other low temperature work requiring uniformly close control.

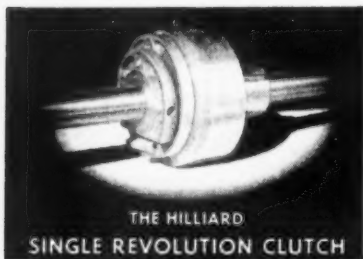
The new Bulletin 73 covering the Model VK-5 Cooley Electric Furnace is available by writing to the Cooley Electric Manufacturing Corp. Dept. BB, Indianapolis, Ind.



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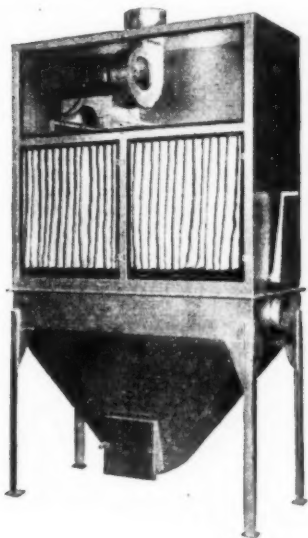


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NEW TORIT DUST COLLECTOR

The Torit Manufacturing Co., makers of self-contained dust collectors, has developed a new model, the No. 122 Dust Collector. Dimensions are 97" high overall, 61½" wide, 26" front to back. It is designed for suction through one 7" inlet, developing 1500 CFM, air velocity of approximately 6000 FPM, and a static pressure of 3¾". The unit is equipped with 30 air filters, each 24" x 30", and incorporates a total filter area of 300 sq. ft., resulting in 5 to 1 filter velocity (5 CFM through each square foot of filter cloth.



The motor in the No. 122 unit is a 3 HP, 3450 RPM. The exhaust air may be discharged through the top, as illustrated, or through the back panel. Inlet locations are fixed; a 7" inlet hole is cut on each side and in the back, and whichever two inlets are not used are covered. An inlet adaptor is furnished to deflect incoming dust laden air to the hopper beneath the filters. Heavy dust particles are thus deposited in the hopper, whereas lighter particles will move on with the air stream and adhere to the cloth filters.

Further information furnished by The Torit Manufacturing Co., Walnut & Exchange Sts., St. Paul 2, Minn.

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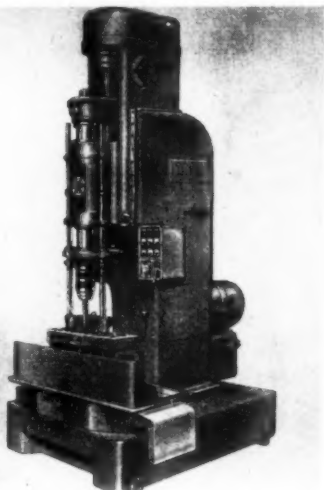


CARDINAL MACHINE COMPANY
 GLENDALE, CALIFORNIA
 "THE **SPEED-VISE** MANUFACTURER"

MICROMATIC PRODUCTION HONING MACHINE

The Micromatic Hone Corp. announces a unit-constructed, single spindle, heavy duty honing machine with a quill type spindle for honing bores from 1" to 4" diameter up to 9½" long.

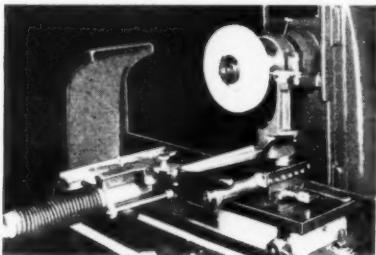
These machines are made up with the following units assembled on the column and base of any other Microhoning machine: (1) The Head Unit, which includes the spindle, hydraulic control panel, stroke control mechanism, and speed control transmission all in one integral assembly. (2) The Hydraulic Unit comprising the hydraulic pump, tank, and pressure control valves. (3) The Electrical Unit, which consists of the electric control panel.



To permit faster stroking without increased power input, and to accomplish more efficient stock removal, all weight that must be reciprocated to stroke the tool has been minimized. All head and guide bars are eliminated; the spindle is the piston rod with rings that act as the piston. Stroke control is more accurate, since it is direct, without linkages or levers. The accuracy of the spindle alignment with the work is assured, because the torque and thrust is taken by the quill closely above the tool. The Micromatic Hone Corp., Dept. BB, Detroit 4, Mich.

HOGLUND PRECISION CONTOUR WHEEL DRESSER

A new accessory which enables the operator to attain high production speed and precision in finished work is the Hoglund Contour Wheel Dresser. This unit operates on a 10 to 1 ratio from a template which controls the movements of the diamond through a stylus. Unskilled operators can dress any complex contour to .0002" in a few seconds once the template is made. All errors in the template are reduced in a ratio of 1 to 10. The limitation of the contour to size or shape is the size of the diamond. If the contour can be entered with diamond, the contour can be dressed. With the .002" radius diamond, any concave radius .002" or larger can be generated.

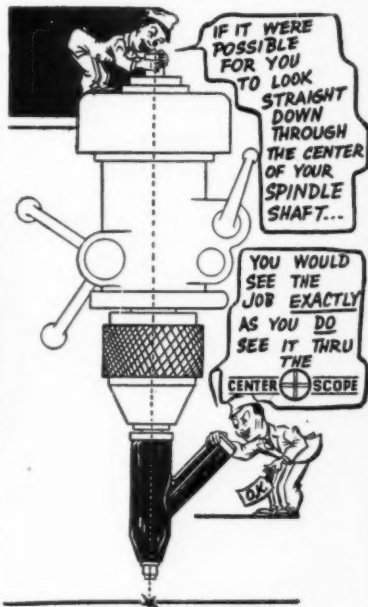


Through careful selection of diamonds, and the proper design of the diamond tool and holder, diamond dressing has been reduced to a low cost operation. The set of five diamonds contains three 60° points with .002", .005", and .010" radii, one 72° point with a .015" radius, and one 90° roughing stone which will do all contours.

Diamond dressing does not require special spindles. The dresser is not attached to the machine, and can be moved about, keeping several grinders busy. It can dress different forms on each by just changing the templates. The vital parts are dust-protected with neoprene moldings which increase the dresser life.

The dresser has a 10" diameter, and a 1 1/8" wide wheel capacity. Height from base to the center line of diamond is 8 5/8". Further data from the Hoglund Engineering Co., Inc., Dept. BB, 697 Selfmaster Parkway, Union, N. J.

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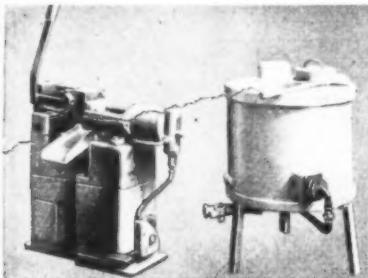
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Glendale 4, California

SMALL DIE CASTING MACHINE FOR ALUMINUM

A new 3 ounce cold chamber pressure die casting machine for aluminum alloys is offered by the DCMT Sales Corp. Simple, compact, fast in operation, the ADC-56 utilizes inexpensive single cavity



molds. Shown with accompanying pre-heat furnace for pre-melting the aluminum, it injects metal under high pressure with a pneumatically operated metal injection plunger.


Micro
Supreme
**LAY-OUT AND
IDENTIFICATION DYE**

12 COLORS*

For Tool, Die, Pattern or Template layout on metal... Quick identification of stock and parts... Shows up in sharp relief—dries instantly—easily removed... Write for circular.

*Purple shipped unless otherwise specified

**MICHIGAN CHROME &
CHEMICAL COMPANY**
6340 E. Jefferson Ave. • Detroit 7, Mich.

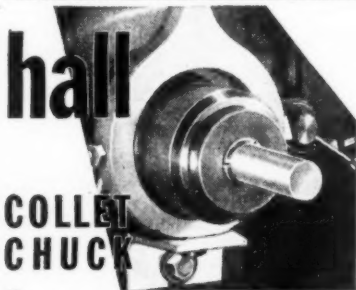


Write to DCMT Sales Corp., Dept. BB, 315 Broadway, New York 7, N. Y., for their booklet on die casting called "Bringing a New Era in Pressure Die Casting." This booklet contains a description of the small aluminum machine and other DCMT models.

AUTOMATIC CONVEYOR LUBRICATORS FOR HIGH TEMPERATURE OPERATION

The J. N. Fauver Co. announces the installation of a new type lubrication system for conveyors operating through high temperatures. These lubricators were designed and manufactured specifically for use in a large automobile plant foundry on core-oven chains. This 6-unit installation operates 24 hours a day, in temperatures to 550° F. Each unit is mounted on top of the 6-inch I-beam which carries conveyor wheels, and automatically lubricates the wheel bearings from each side of the 2 wheels above each hanger. The unit is also equipped with a manifold containing 11 nozzles that lubricate all link pins between hanger trolleys each trip. Each set of wheels is 88" apart. The conveyors travel at a speed of 2 feet per minute.

Many other types of conveyor lubricators have been developed by Fauver



SPEED UP production in multiple operations with push-out type Hall Collet Chuck. Full spindle capacity or over. Tremendous grip over or under stock size to .007—without adjustments...no bearings, friction, heat or loss of power. Instant release without stopping lathe.

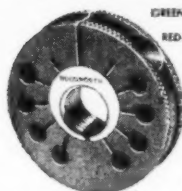
Two-inch capacity, now only \$145

One-inch capacity, \$95

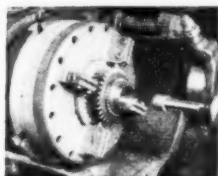
Round, square or hex collets, plain—serrated

HALL MANUFACTURING COMPANY

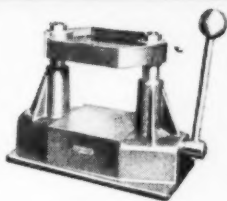
622 Tularosa Drive • Los Angeles 26, Calif.



● THREAD RING GAGE



● DIAPHRAGM CHUCK



● CONE-LOK JIG

WOODWORTH CONTRIBUTIONS TO MACHINE TOOL PROGRESS!

★ Progress is on parade at the 1947 Machine Tool Show! And Woodworth marches forward, too, with its outstanding contributions to the machine tool world:

- **THREAD RING GAGES**—soundly engineered for greater accuracy and longer gage life.
- **CONE-LOK JIGS**—noted for their mechanical simplicity and "life-time" construction.
- **DIAPHRAGM CHUCKS**—featuring maximum accuracy and minimum maintenance.

Why not send us an inquiry if you have a gage, chuck or jig problem in your plant? You'll find Woodworth products engineered to your needs.

ACCURACY YOU CAN TRUST

Send for

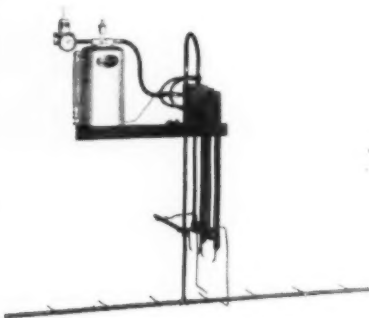
The new 1948 Woodworth Gage Catalog just off the presses. Requests for copies must be written on company letterheads.



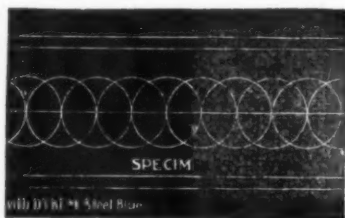
WOODWORTH

N. A. WOODWORTH CO., 1300 EAST NINE MILE ROAD • DETROIT 20, MICHIGAN
COMPLETE LINE OF PRECISION GAGES • DIAPHRAGM CHUCKS • CONE-LOK JIGS

lubrication engineers. Equipment for each installation is made to fit specific requirements, whether extremes of heat or cold, high or low speed of travel, or other



unusual conditions. Additional data is available from the J. N. Fauver Co., 49 W. Hancock St., Detroit 1, Mich.



with DYKEM Steel Blue
DYKEM STEEL BLUE
STOPS LOSSES
making dies & templates

Simply brush on, right at the bench; ready for the layout in a few minutes. The dark blue background makes the scribed layout lines show up in sharp relief, and at the same time prevents metal glare. Increases efficiency and accuracy.

Write for full information.

THE DYKEM COMPANY

2301G North 11th St., St. Louis, Mo.
 In Canada: 2466 Dundas St. West, Toronto, Ont.

NEW WELDING FLUX REQUIRES LOWER TEMPERATURES

The Farrelloy Co. introduces a new welding flux known as Thermo-Lo Blue. This flux is a product of war time research to meet the exacting specifications required to give strength, machineability, and nonporous welds. The chemical catalytic action of Thermo-Lo Blue makes possible a weld at much lower temperatures; in many cases, preheating is unnecessary.

The new flux provides for a better weld at low temperature through chemical reaction which helps to break down the surface structure, thereby causing a homogenous weld that is nonporous and not brittle. The product is dehydrated in manufacture, and ground extremely fine, features which cause the flux to cling to the welding rod and not lift off the work while the temperature of the metal is being raised with the torch.

These characteristics of Thermo-Lo Blue welding flux, of catalytic action, dehydration, fine grind, and outstanding formula, enhance its superiority. The flux is a product of the Farrelloy Co., 1243 No. 26th St., Philadelphia 21, Pa.

Drilling - Boring - Reaming
CUT LOADING TIME
with ESCO Drill Jigs

Standards — Mijits
50 sizes always in stock

Write for
catalog.



ACME-DANNEMAN

Exclusive National Distributor for
ESCO Engineering Corp.

223 LAFAYETTE ST., NEW YORK 12, N. Y.

BASE OF THIS HEAVY DUTY CLAMP

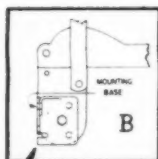
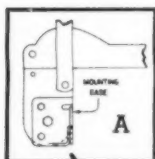
Can be mounted at any angle within 180°

A man's normal hand operation can exert a pressure of 1,350 lbs. at extreme end of toggle bar. Work is automatically locked by characteristic toggle action of clamp.

The base can be turned to face front (A) or back (B), or any angle between.

The ingenious base, with its integral front bracket together with the back support, holds

the deflections to a minimum. As illustrated in A, it is 3/16" and in B, it is 7/32" at spindle.



FRONT OR BACK

Entire spindle assembly can be removed to accommodate your own special pressure pad.

Send for template of this
MODEL S-1100

If you're interested in other toggle-action devices, ask for complete catalog. This gives complete information about many types of quick-acting clamps and pliers.

The unique spindle assembly can be moved along toggle bar, to accommodate various placements of work.

9 1/8"

16 1/4"

**KNU-VISE
PRODUCTS**

MANUFACTURED BY

LAPEER MANUFACTURING COMPANY

3056 DAVISON ROAD

LAPEER, MICH.

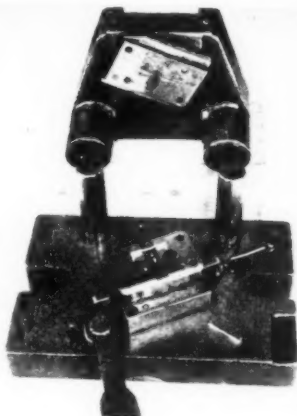
CARBIDE SIZING DIES ELIMINATE SERVICING

The Carboly Co., Inc., Detroit 32, Mich., reports that Carboly cemented carbide dies have virtually eliminated die servicing in swaging and sizing of small steel links at the Underwood Corp., Bridgeport, Conn.

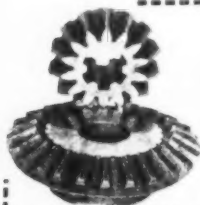
The operation consists of sizing two hubs and swaging the top of the link to form. Portions are flattened at both ends of each link; diameters of the links are held to .071"-.072". The die is also required to hold a constant distance between the two diameters.

Two Carboly bushings are mounted in a hardened steel platen. The top portion of the die is plain. The two plugs have a slip fit in the holes of the bushings. These holes in the Carboly bushings are made to .071" diameter. The plugs are cam-operated. They eject finished links from the die and are also used to determine the length of the link ends. Links are of S.A.E. 1010 cold drawn wire of .0695" diameter, cut to required length and with the two ends bent as shown prior to forming. A strip of the proper length is inserted in the die, pressure is exerted,

and the finished link ejected from the die.



Production with Carboly inserts between the time of their installation and



GEARS TO YOUR SPECIFICATIONS

- Furnish Complete or Cut Only, Any Material.
- Spur and Helical Gears to 12" Diameter, 6 Diametral Pitch.
- Straight Bevel Gears to 3" Diameter, 12 Diametral Pitch.
- Worm Wheels, Worms, Sprockets, Splines, Serrations, Irregular Forms, Ratchets.

MICRO PRECISION GEAR & MACHINE CO.

1736 East 30th St., Cleveland 14, Ohio



Universal Stock Reel

The Humm Universal Stock Reel is an essential device for the handling and feeding of coil stock to Power Presses.

1. Adjustable Reel to fit various sizes of coil.
 2. Reel is adjustable to suit height of Press.
 3. Reel can be inclined to any position.
- PRICE \$55.00 F. O. B. BROOKLYN, N. Y.

Manufactured By

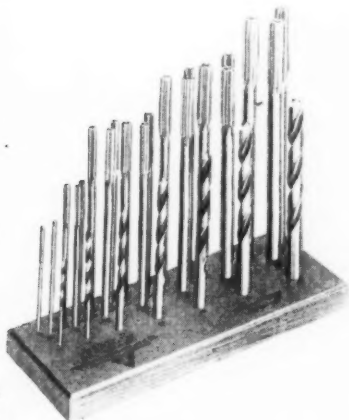
John Humm Safety Equipment Co.
253 SHEFFIELD AVENUE
BROOKLYN 7, N. Y.

the last production report has been about 30,000 pieces, with no detectable signs of wear on the Carbobloy inserts; it is estimated that 1,000,000 pieces can be produced from the die before it will require reservicing.

NEW REAMERS IN DECIMAL SIZES

The Twentieth Century Manufacturing Co. is producing Supream decimal sized reamers under and over the regular standard sizes from .0461 to .0501; over 500 different sizes are available in decimal and smaller sizes, as well as special sizes from .0501 to 1.510". Machinists can now have the precise size for the job; the fact that there can be only one right dimension makes the Supream reamers unique.

These accessories are made of fast cutting, long lasting 18-4-1 high speed steel. All flutes are ground on face and back after heat-treatment for smooth reaming, which prevents clogging or freezing of chips. All diameters are held to plus .0002" and minus .000 for close sizing. Size markings are stamped halfway up on the shanks so they cannot be obliterated by the drill press chucks.



Another feature of Supream Drill and Reamer Sets is the individual serial numbering of each set for inventory control as well as identification. New literature available upon request to Twentieth Century Manufacturing Co., 3722 Montrose Ave., Chicago 18, Ill.

for Cutting down
CUTTING COSTS

see your
Star
supplier

METAL CUTTING
Star

CHANCES of cutting down cutting costs are slim unless you get precisely the right blade for the job. Your Star supplier has that blade—the one that means economy for you—because he is backed by the Star line—a complete line of blades. He has a Star blade that's right for every job a hack saw or band saw can do, with the frame to go with it.

Moreover, Star blades will prove themselves right on whatever you're cutting—metals, plastics or other non-metallics... right in the way you want it cut—clean, fast, calling for few blade replacements. So for cutting down cutting costs, your best bet is Star's complete line and your Star supplier.

HAND BLADES

FRAMES

POWER BLADES

BAND SAWS
(Metal cutting, including Skip-tooth)

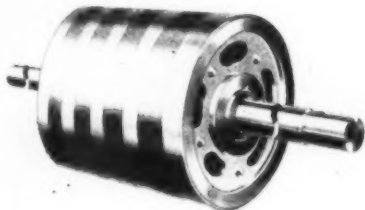
Sold only through
recognized distributors

CLEMSON
CLEMSON BROS., Inc., Middletown, N.Y.
Makers of hand and power hack saw blades,
frames, metal cutting band saw blades and
the Clemson D-17 lawn machine.

BELT CONVEYOR MAGNETIC HEAD PULLEY

The Homer Manufacturing Co. announces an addition to their line, the Homer Permanent Magnetic Pulley, designed for use as a head pulley in belt conveyor systems, to remove ferrous metal particles and pieces from materials being conveyed.

These pulleys, with their intensive magnetic fields, are built of cast aluminum



and steel, and are available in all standard diameters above 10", and in widths which are multiples of 6". Only the most

powerful of magnets are used in their manufacture, to assure thorough cleaning of materials passing over them. All pulleys are amply ventilated to dissipate any heat created by belt slippage or friction. For further details, write the Homer Manufacturing Co., Inc., Dept. I-34, Lima, Ohio.

PNEUMATIC RIVETING MACHINE WITH INTERCHANGEABLE HEADS

A Pneumatic Riveting Machine with interchangeable heads of four capacities in one machine that combines hammer action with rotation, for the assembly of parts made of metal, plastics, fibre, etc., is announced by the Schlack Manufacturing Co. The interchangeable heads of the Pneu-Spin machine are available for rivet capacities to 3/32", 5/32", 1/4", and 5/16", based on soft steel. The machine mounts a motor-driven spindle for peening tools to form round, oval, or flat heads, topeen shafts, pins or studs; to flare small tubes and brass connectors; to furl shoulder bushings and light tubes.

The spindle is carried in a spring supported frame, sliding on a vertical column equipped with a foot pedal. Above the spindle head is a pneumatic hammer that imparts from 4000 to 6000 blows with a



If you want
MORE PARTS per hour
LOWER COST per part

the BARKER WRENCHLESS CHUCK can do it faster, better and stand up to it longer. Where the run is continuous on turret, engine lathes, cutting off machines, drill presses or any other type of chucking machine, these Chucks will increase production and pay for themselves in 60 to 90 days while

doing it. See how a Barker Wrenchless Two-Jaw or Three-Jaw Chuck can speed up production in YOUR plant.

See us at Machine Tool Show Booth No. 33DD

Chuck Division
THOMAS HOIST CO.
24 S. HOYNE CHICAGO 12

$\frac{1}{4}$ " stroke to the rotating tool from a 75 to 80 lb. air supply. A positive stop assures uniform rivet heads. A vertical spindle movement is through $2\frac{1}{2}$ ", with a vertical adjustment though $4\frac{1}{2}$ ". Overall



height of the unit is 65", anvil height is 40". The spindle motor is $\frac{1}{8}$ HP, 1200 rpm, of ballbearing design, with push-button control. The Schlack Manufacturing Co., 13239 Birwood Ave., Dept. BB, Detroit 4, Mich.

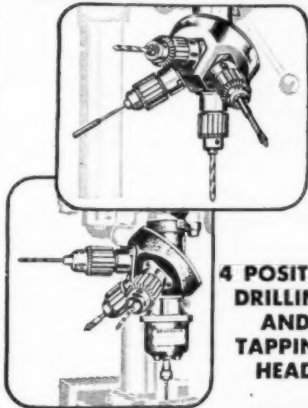
NUMBERING MACHINE USEFUL FOR IDENTIFYING PARTS

A useful parts numbering machine is now in production by the Numberall Stamp & Tool Co. Designated as the Model 70 Multi-wheel Numbering Machine, the accessory is made in a single piece instead of two. It is designed with a shank for hand or press operation, and may be equipped with any number of wheels from 3 to 20. The wheel discs repeat the same numbers until changed, a factor which makes the accessory of particular advantage in the identifying and marking of several thousand identical parts or stock items. It stamps the numbers quickly and neatly, and the results are perfectly aligned. Further data on the Model 70 is available from the Numberall Stamp & Tool Co., Huguenot Park, Dept. BE, Staten Island 12, N. Y.

Are your
DRILLING
and **TAPPING**
Costs Too High?

You can
SAVE as much as
75% with

QUADRILL and
QUAD-TAPPER



4 POSITION
DRILLING
AND
TAPPING
HEAD

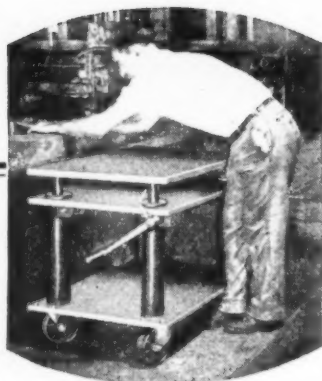
Now, more than ever, production costs must come down. The low cost QUADRILL and QUAD-TAPPER attachment wipe out all lost motion. Pays for itself in no time. Instantly operator switches from one size drill to another. No unproductive time. Increases output. Cuts costs way down.

Write today for literature and prices.

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DRILLET CORPORATION

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WHEN WEIGHT MUST BE MOVED

SEND *one* MAN and **PORTELVATOR**

Stop idle machine time! With Portelvator, the Hamilton Portable Elevating Table, one man can safely lift and carry loads usually requiring the strength of four.

Three table surfaces. **Four point support.** Working area accessible from all sides. Slow lift for heavy loads. Fast lift for light loads. Floor lock for rigid positioning. A practical tool in any plant.

Be practical! Investigate! Write for Bulletin P-47.

SUPER SENSITIVE DRILLING AND TAPPING MACHINES • PORTELVATORS



THE
Hamilton

TOOL COMPANY

824 SO. NINTH STREET • HAMILTON • OHIO • U. S. A.

UNIVERSAL FIXTURE REMOVES MATHEMATICS FROM TOOL GRINDING

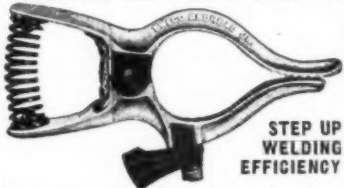
A revolutionary method of high speed tool grinding has been introduced by the Rugg Engineering Div., General Industries Corp., South Coventry, Conn.

With the use of the Universal Tool Grinding Fixture, mathematics are eliminated from tool grinding. The ball and socket principle is utilized to reproduce any rake or cutting angle on high speed threading and cutting tools with extreme rapidity and with accuracy to a fraction of a degree. While doing so it will automatically compute and set the tool on the compound angle, considered to be the most important factor responsible for heat dissipation, and permits the use of smaller rake and clearance angles.

The Fixture can be used on any surface grinder equipped with a magnetic chuck. The ball is chrome steel alloy with calibrations of astonishing accuracy. The base, is tool steel and hardened and ground with a protective bluing, is made of two parts. When assembled, the two parts of the base meet on the exact vertical center of the ball. Ball can be positively locked after each setting.

Three slots, the bottom of which are parallel with the horizontal center line

"REDHEAD JR." GROUND CLAMP



TWECO Redheads are made in Midget 125 ampere, Jr. 300 ampere, Sr. 500 ampere sizes.

TWECOTONG Holders are made in 250, 300 and 500 ampere sizes. Fully insulated, simple, efficient.



Free TWECOLOG shows Holders, Clamps, Connectors, Terminals and Lugs for Electric Welding.

Manufactured by

TWECO PRODUCTS COMPANY

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In Canada: G. D. Peters & Co.

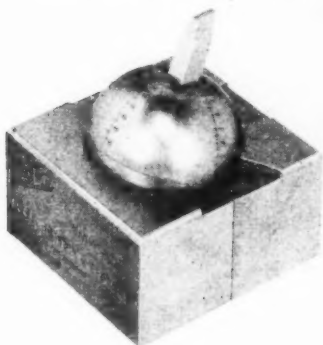
of Canada, Ltd., Montreal

Export: Henry Jahn & Son, 7 Water St., N. Y. C.

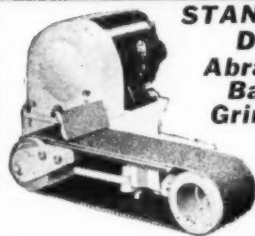
**TWECO
PRODUCTS**



of the line of the ball, and calibrated laterally are machined into the top side of the base. With these two sets of calibrations, one set on the ball and the other set



on the base make the setting of any angle or combination of angles simple and fast for even the most inexperienced mechanic.



STANDARD D-4 Abrasive Band Grinder

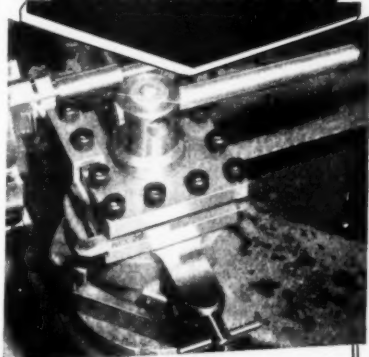
**Famous
for
Stamina**

This new, streamlined bench type grinder assures fast, quality finishing on metals, plastics, wood, fibre . . . at low cost. Built to machine tool specifications, Standard D-4 is equipped with improved band tension control and specially designed protective motor hood. 4x36 1/4" band. The ideal portable unit.

**OTHER STYLES AND SIZES IN NEW
MANUAL ON FINISHING—WRITE TODAY**

WALLS SALES CORP.
306 E. 38th St., New York 16, N. Y.

4 OPERATIONS on your ENGINE LATHE WITH ONLY 1 TOOL SET-UP



Colwell Turrets
from \$36 to \$60.⁵⁰

With a Colwell 4 Tool Post Turret on your lathe, you can do turning, necking, threading, cutting-off—or any combination of successive operations up to 4, with just one tool set-up. No time lost changing tools and our positive indexing assures working to close tolerances. Sizes to fit most lathes. Write for catalog.

S. G. COLWELL
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Providence, R. I.

**NO TROUBLE—If you have a set
of WALTONS when Taps
break off!**

Prices
range from
\$1.50 to \$2.20
for the
popular sizes.

Write for folder
No. 12 and for
details of 30 DAY
FREE TRIAL
OFFER.



**WALTON TAP
EXTRACTORS
Back Out
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Precision type
ball and roller
bearings assure
maximum capac-
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NIELSEN, INC. **LAWTON,
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Immediate Delivery!

Standard Size Dowel Pins from
 $\frac{1}{8}$ " to 1" diameter and from
 $\frac{3}{8}$ " to 6" length supplied in
.0002 and .001 over basic sizes.
Unless otherwise specified, .0002
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SCHULTZ & ANDERSON CO.

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**Monarch Precision
SHAPLANE
Radius Tools**



Patent Pending

For Lathes, Shapers, Planers, Boring
Mills, etc. Min. Rad. $\frac{1}{2}$ " to Max.
Rad. $2\frac{1}{2}$ ". Made in 3 Models.

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NEW features that mean Better Tapping

This new high speed Procunier Tapping Head is the answer to your toughest tapping problems. It is a precision machine which assures greater tapping accuracy at high speed—with less tap breakage. Check these new Procunier features:

✓ New double-cone cork faced friction clutch engages the conical surfaces of the drive and reverse shells, driving the tap with a soft "cushioned" action.

✓ New clutch instantly "slips" if tap strikes bottom or sticks—reducing tap breakage.

✓ High sensitivity of Procunier Tapping Head makes it possible to quickly detect dull or "loaded" taps by the pressure needed to drive them.

✓ Procunier Tapping Heads have heat treated gear mechanism, ball bearings, lightweight aluminum housings as well as many other advanced features.

Increased production facilities make it possible for us to guarantee **prompt delivery** on all orders.

A complete line of Procunier Tapping Heads is available, including Cover Clamping models — write today for illustrated bulletins.



Procunier

Safety Chuck Company

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Chicago 6, Ill.



PROCUNIER SAFETY CHUCK CO.
14 S. Clinton St., Chicago 6, Ill.

Send me bulletins on

- ☐ Procunier High Speed Tapping Heads
- ☐ Procunier "Tru-Grip" Tap Holders
- ☐ Universal Tapping Machines

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FOR FAST ACCURATE Lathe Production



Mounts
without
drilling
or tapping
of lathe.

Depend on the MIRACLE COLLET CHUCK

Quick opening, quick closing, positive grip, maintains precision. Simply, easily attached to $1\frac{1}{2}$ "-8 thread spindle nose bench lathes. Proven, dependable, 2-end split collets to 1" capacity, changed in less than 60 seconds. Available for round, hexes, squares. Complete chuck only \$69.50. Write for folder.

\$69.50

MIRACLE PRODUCTS CO.

1025 Santa Fe Ave. Los Angeles 21, Calif.

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CAN'T AFFORD TO
MAKE YOUR GAGE
HANDLES

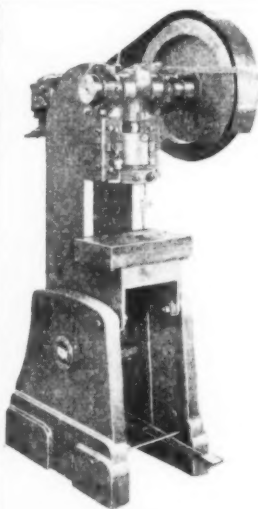


Available in
10 standard
sizes — steel
or aluminum all colors im-
mediate delivery.
From stock all sizes plug gage
blanks.

Write for literature and price lists.

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The U. S. 12-Ton No. 1 PUNCH PRESS

- All Steel Frame
- All Bronze Bearings
- Modern Design
- Heavy Construction
- Precision Built

Standard Specifications

STANDARD STROKE	2"
SHUT HEIGHT	6 $\frac{1}{8}$ "
AREA BOLSTER	8" x 14"
FRAME OPENING	7 $\frac{3}{8}$ "
DIA. OF SHANK	1 $\frac{1}{8}$ "
STROKES PER MINUTE	140-165
MOTOR REQUIRED	$\frac{3}{4}$ -1140
WEIGHT OF PRESS	900 LBS.

Immediate Delivery

FOR FULL INFORMATION AND PRICE LIST
SEE YOUR LOCAL DISTRIBUTOR OR WRITE US

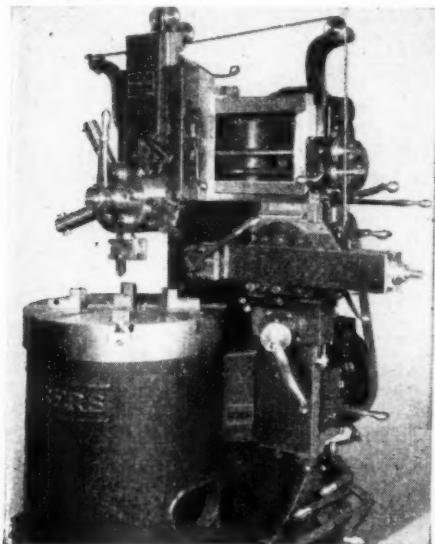
U. S. PRESS and TOOL CORP.

6456 NORTH HAMLIN AVE.
CHICAGO 45, ILLINOIS

*How to turn your
old machine tools*
INTO BRAND NEW
ROGERS "Perfect 36"
VERTICAL TURRET MILLS

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Check with Rogers before buying equipment to bore, drill, turn or thread ferrous and non-ferrous castings and forgings.



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Rogers exclusive arrangement with one of America's leading machine tool dealers now makes it possible for you to trade in your old, worn-out equipment on new Rogers Mills. Trading your old equipment for new Rogers Mills is just as easy as trading your car.

Your cash outlay is at a minimum when modernizing your plant facilities by taking advantage of new Rogers Mills and Trade-in Plan.

Call, wire or write for complete information on Rogers Trade-in Plan and Rogers "Perfect 36" Vertical Turret Mills.

Rogers Machine Works, Inc.
SALES OFFICE: 1813 ELMWOOD AVE.
BUFFALO 7, N. Y.
FACTORY: ALFRED, N. Y.

TRANSPORTER WITH SKID RACK

Both high and low skid platforms, with a variance in height of as much as 5", can now be handled with the same Transporter. A special model designed to solve this problem has been announced by the Automatic Transportation Co., 149 West 87th St., Chicago. The unit features a hinged rack which stands upright at the front of the truck's platform when low skids are being handled, and is lowered to lie flat on the platform, giving added height to the truck when high skids are being lifted.



Except for the special rack, the new Transporter has the same operating features as its standard prototype: maneuverability, ease of operation, and speed.

It is available with either electric lift or foot lift. Both platform and rack heights can be designed to fit the skid platforms used in any particular plants, the manufacturer reports.

LARGEST PIVOTED-BLADE SHEAR

The largest shear ever built employing the pivoted-blade principle of operation was recently completed by The Cleveland Crane and Engineering Co., Wickliffe, Ohio.

Capable of cutting 12 feet of $\frac{3}{4}$ " steel plate, at 30 strokes per minute, the machine has an extra deep 36" throat, which permits slitting of very wide plate. Turning a hand crank, conveniently located on the right end housing, changes the gap between the knives. A dial indicator indicates the clearance in .001" and also shows the plate thickness that may be cut for any knife setting.

The machine is electrically operated by a movable foot switch which substitutes tireless toe action for tiresome knee action required by conventional foot treadles. A back-gauge which floats on ball bearings is adjusted by a crank at the right end near the bed of the machine. A plate-type knife guard safeguards against injury from both knives and hold-

Dependable MEASURING & CHECKING EQUIPMENT

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STRAIGHT and OFFSET TYPE HAND WHEELS



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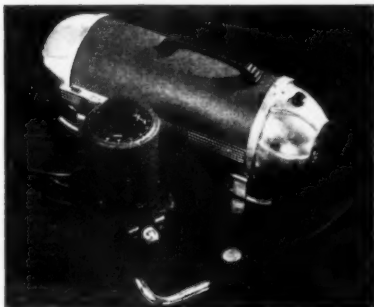
DETROIT 12, MICHIGAN

downs. Ball bearing transfers mounted on top of the bed are a feature which facilitates the movement of heavy plate. Steelweld Shears have been built for metal of from 12 gauge to $\frac{3}{4}$ " thickness. Additional information is available from the manufacturer.

TABER ABRASION-TESTING INTERVAL TIMER

An accessory developed to promote greater accuracy of results in wear-testing electroplated, organic, electrolytic, or other protective coatings on metal is announced by the Taber Instrument Corp. The development is designed specifically for use with the Taber Abraser, an instrument for measuring the "wear Mileage" of surface finishes in connection with product development or quality improvement research.

The device, called the Interval Timer, is an electrical attachment which permits operating time of abrasion tests to be controlled within predetermined limits. The Interval Timer may be set to operate for any desired period of from one to 15 minutes, so that an abrasion test may be run for approximately any predetermined number of wear-cycles up to 1000.



Designed for portable use, and enclosed in a black wrinkle-finish housing, the Timer has a full-vision 180° dial, adjustable time-regulating knob, which makes easy, accurate time settings. Other features include a toggle switch to shut off the Abraser without disturbing the time interval, a self-starting, slow-speed type, synchronous motor, and an adjustable stop that permits exact repetition of the time setting for each operation. The Taber Instrument Corporation, 111-MTBB Goundry St., North Tonawanda, N. Y.



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Facilities for machining castings and small assemblies.

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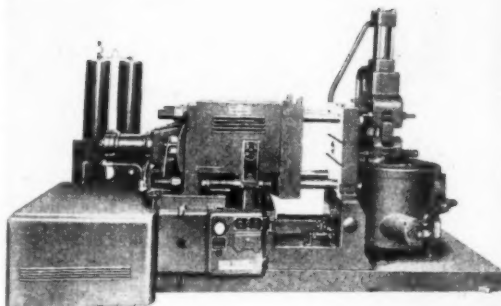
THE HAN-DEE SPRING and MANUFACTURING CO.
2070 PARK STREET HARTFORD, CONNECTICUT

REED-PRENTICE NO. 2 DIE CASTER

Reed - Prentice announces an addition to its line of die casting machines. The new No. 2 machine is designed for die casting of lead, tin or zinc base alloys and offers a large casting area with die plates 38" x 36" and space between bars 24" x 24". Sixteen pounds of zinc may be cast at 1400 pounds psi pressure.

The operation of the machine is either manual or semi-automatic. For semi-automatic operation, dies are closed manually by the push buttons on control panel after which the remainder of the cycle is automatic and controlled by an adjustable electric timing device. When manually operated, the four push buttons on the control panel are used. The upper two open and close the dies; the lower two actuate the plunger. The machine is electrically interlocked, eliminating all danger of shooting the metal until the dies are securely closed. Arrangements are made for automatic ejection of castings. Die plates are finished on sides to provide for core pulling attachment and push button operated control valve is provided to actuate core pulling cylinders when they are used.

Diameter of tie bars.....4"
Maximum die space.....30"
Die opens10" or 14"



Locking pressure400 tons
Diameter of hydraulic plunger cylinder4½"
Metal plungers available,
.....2½", 3", 3½", 3¾"
Plunger stroke8½"
Horsepower of motor15
Weight18,000 lbs.
Floor Space14'6"x6'

The round type melting furnace provides increased pot life because of tangential firing and elimination of stress points caused by rectangular corners.

The No. 2 model is also available with horizontal plunger and cold chamber attachment for die casting of aluminum, magnesium, or brass alloys.

LIGHT DUTY REXON VIBRATION MOUNTS SUSTAIN DEAD WEIGHT

A new light-duty vibration mount to isolate vibration in electronic equipment, and test apparatus, is announced by the Hamilton Kent Manufacturing Co.

The new mount, capable of handling dead weight loads as low as ½ lb. per lineal inch of mounting strip, follows the basic design of larger Rexon Mounts. These products utilize the vibration dampening properties of "rubber-in-shear" but with no possibility of overloading the shear elements. This property stems from the use of a special X design of the rubber element which acts in shear at the points of the X under nor-

mal loading, but in compression when the load exceeds the rated capacity of the mount.

Rexon light-duty mounts are furnished in strips 12" long. The entire strip may be used, or the strip may be cut by the user into any length section (in inch multiples depending on the load to be supported).

Other Rexon mounts, are designed to handle loads up to 10,000 lbs. or more. Selection of the proper mount is determined by the total weight and weight distribution of the machine to be mounted and involves no special engineering service. Full details available on request to Hamilton Kent Manufacturing Co., Kent, Ohio.

OTHER SHOWS TO BE HELD IN CHICAGO

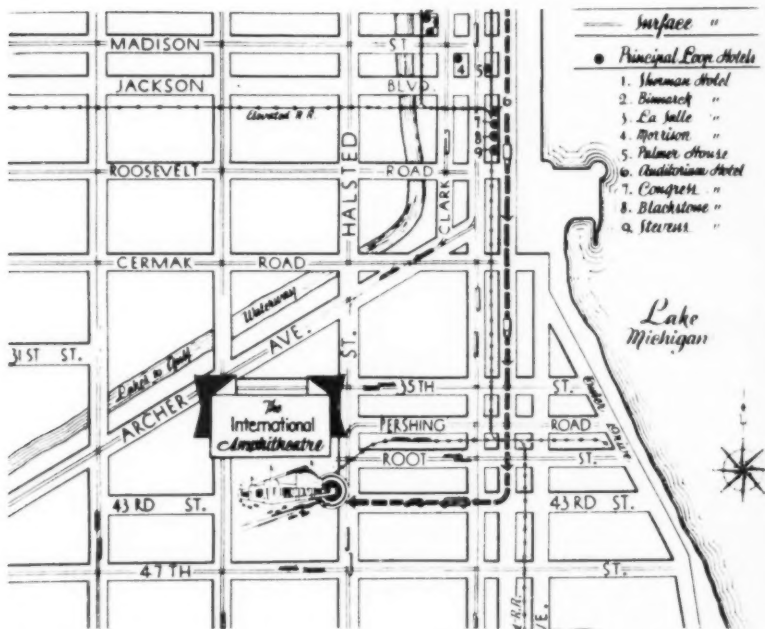
The International Amphitheatre, located at 43rd and Halsted streets, just $3\frac{1}{2}$ miles south of the loop, will be the site for the Production and Machine Tool Show. This show will be held at the same time as the Machine Tool Show, September 17 through 26.

The Production and Machine Tool Show is composed of independent exhibitors, American and Overseas, and will feature machine tools and accessories. Among machines on exhibit will be drill presses, punch presses, grinding

machines, band sawing and filing machines, milling machines and scores of other machine tools and accessories. Many of the exhibits will be in operation.

The Production and Machine Tool Show, not to be confused with the National Machine Tool Show at the Dodge-Chicago plant, will be open from 10 A.M. until 9:30 P.M. daily except Sunday, Sept. 21. Admission will be by registration.

How to get to the Production Show from the Loop.



REMOTE CONTROL DEVICE FOR SETTING INSIDE MICROMETERS

The Central Tool Co. has added a new accessory to its line, known as "Remote Control." This device enables the mechanic to set a Central inside micrometer without removing it from the hole being measured. With Remote Control, the tedious process of repeatedly trying and setting the "mike" to the proper diameter is eliminated.



An accessory to Central Tool Company's Inside Micrometer Sets No. 808 and 812, Remote Control is an aid to mechanics, since it fills the need for a device which eliminates repeated adjustments to obtain an accurate reading.

Use of the Remote Control for measuring straight holes is simple. After it is assembled to the micrometer head, the mechanic inserts the micrometer into the hole to be measured, and by operating the turning knob at the end of the Remote Control handle, adjusts the micrometer to the diameter of the hole, then removes the micrometer and takes the reading.

Further information from the Central Tool Co., Dept. BB, Cranston, R. I.

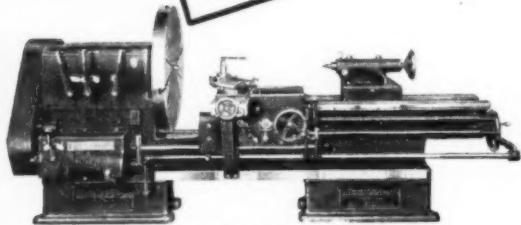
ELECTRODE FOR WELDING LIGHT GAUGE METALS

A new electrode, "Hobart No. 13", designed to simplify the welding of light gauge mild steel, has been announced by Hobart Brothers Company, Troy, O.

Low penetration, ease of handling and steady uniform transfer of metal all contribute to make this electrode extra fast for out of position welding on light gauge sheet metal. It is also recommended for welding light sections of mild steel to heavier ones.

This electrode is designed for use with DC straight polarity or AC, and is available in 1/16", 5/64", 3/32" and 1/8" diameters.

NEBEL LATHES



SERIES "AG - 20/40"
ALSO MADE IN 28/50 SER. G.

- GEARED HEAD
ENGINE LATHES.
- EXTENSION BED &
- REMOVABLE
BLOCK GAP
LATHES.

Nebel Lathes provide the answer to your production problems . . . simplicity of design, sturdy construction, accuracy and ease of operation are Nebel characteristics. Nebel Lathes are available in various types and sizes . . . so investigate Nebel today. Write for complete data.

Illustrated is the extension bed gap lathe designed for use as either a gap or engine lathe.

THE NEBEL MACHINE TOOL COMPANY

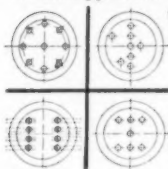
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ADJUSTABLE SPINDLE**

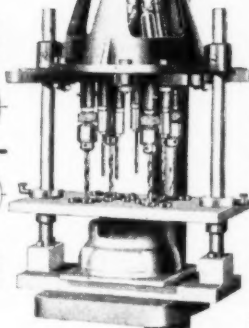
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AT MINIMUM COST!**

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to suit any pattern.**



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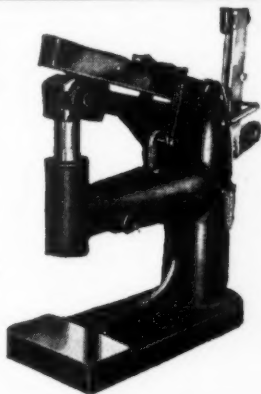
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	Model 1	Model 1-B	Model 2
Stroke	2"	2"	2½"
Spindle	1"	1"	1¼"
Throat Spindle	4¾"	4¾"	8¼"



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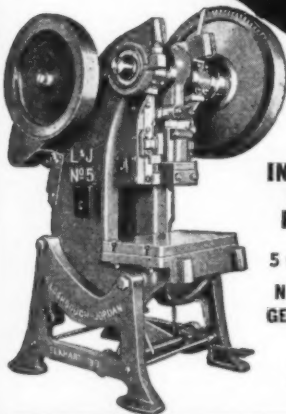
**VISIT
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AT THE
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CHICAGO, ILL.
SEPT. 17-26th

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Pres-Vac
SAFETY FEEDER
KEEPS
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in their line**



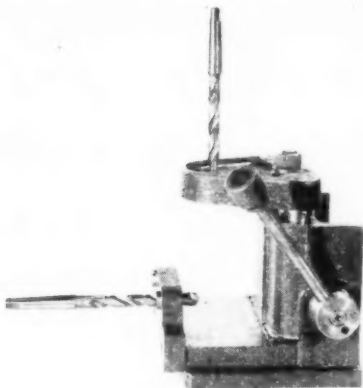
—head rivets from smallest to $\frac{3}{4}$ " diameter either by NOISELESS SPINNING, or VIBRATING HAMMER method—Sizes to meet all needs—Types include Vertical and Horizontal Multiple Spindles.

Write for literature and don't forget to send samples.

THE GRANT MFG. & MACHINE CO.
C E Station, Bridgeport 5, Conn.

LIFT-SWING FIXTURE

This new lift-swing fixture permits vertical drilling from two sides. The



swinging top plate, a patented feature, allows loading and unloading from top.

The top plate swings in a 180° arc. In many cases, secondary operations, such as: tapping, counterboring, chamfering, and others may be performed by top bushing plate. For further information write: Acme Tool Mfg. Co., Perry Street, Belleville 9, New Jersey.

SPECIAL LUBRICATED LATHE CENTER DEvised AT G-E PLANT

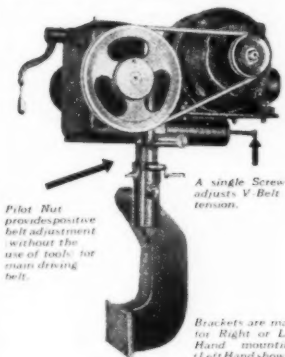
A special lubricated lathe center devised at a General Electric plant prevents shaft centers from "picking up" when machining heavy shafts. It permits the shaft to be lubricated while a cut is being taken, and makes it easy to keep the lubricant free from foreign matter.

Lubricant is introduced into the hole in the center of the shaft by a pressure gun through a fitting on the shank of the lathe center. When the shaft center is full, extrusion takes place along a 1/16-x 1/16-in. groove on the outside of the lathe center.

As the shaft turns, the lubricant is wiped against the shaft center. The groove is positioned where there is low pressure between the machine center and the shaft center. This gives the best possible adhesion of the lubricant to the shaft center.

BERKELEY POWER DRIVE

THE DRIVE TO BETTER AND GREATER PRODUCTION



Here's a drive for motorizing machine tools for various purposes and capacities. Constructed with either a three or four speed selective sliding gear transmission, this drive is individually designed and built for your specific needs. Transmission handle is readily accessible . . . gears operate in a sealed housing to prevent loss of oil or entrance of foreign substances. Drive is direct on high speed . . . no power is transmitted through the gears. Write today for full particulars and informative 8 page folder and learn how BERKELEY POWER DRIVES can speed up production in your plant.

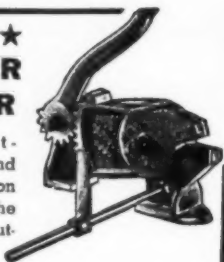
Drives are also available for every type of machine tool and special units.

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DANVILLE, ILLINOIS

★ THE ★ WONDER CUTTER

The lowest-priced wire and rod cutter on the market. The hardened cutters last indefinitely.



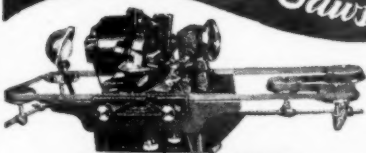
Hand operated. A giant for work, cuts wire and rods up to 3/8-in. round or 3/8-in. square and band iron up to 1/2 in. by 2-in. Adjustable stop for repeated cuts to same length. Large or small, your shop can use a WONDER CUTTER.

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AUTOMATIC
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**4"
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TOOL & CUTTER COMPANY**

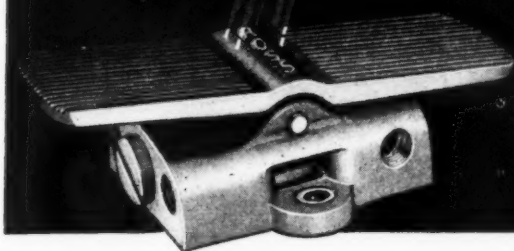
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SNAP and STAMINA!



NEVER BEFORE in this type of valve—ruggedness, reliability, low cost and low maintenance, PLUS the choice of foot or hand lever control. That's Ross' answer for small air cylinder use on machines where easy operation, continuous high production and compactness are "musts". It's Ross quality, of course, precision-machined brass and stainless steel construction, yet at a price you can't afford to pass up.



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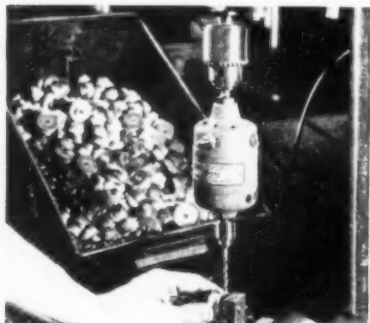
See Big Ross Valve Display—Machine Tool Show—Booth 313B

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395

DUMORE DRILLSPEEDER MINIMIZES TOOL BREAKAGE

The new Drill Speeder is a sturdy self-contained high speed electric drill that fits into the chuck of any standard drill-press, lathe, milling machine or specially designed machines and fixtures. Equipped with $\frac{3}{8}$ " straight shank or No. 2 Morse taper shank, the Drill Speeder supplies its own power—1/16 horse power—and 17,000 RPM for drills from No. 80 up to $\frac{1}{8}$ " diameter. Jacobs chuck and motor parts



are accurately balanced so that small hole drilling can be performed at high speed with drill breakage reduced to a minimum. It also provides the tool designer and production engineer an ideal means of quickly setting up for small production drilling jobs at the absolute minimum of cost. For additional information write the Dumore Co., Racine, Wis.

ELECTRONIC GAUGE FOR FINE MEASUREMENTS

Speedier and highly accurate inspection of tiny steel bearing rollers is now possible with an electronic gauge installed by SKF Industries, Inc., for automatically measuring differences to within three-millionths of an inch—or a thousand times finer than a human hair.

The device, resembling a combined futuristic radio set and pin-ball machine, sorts rollers into six groups of sizes, each differing from the other by only 20 millionths of an inch. As a roller passes through the gauge a sensitive "finger" or pick-up relays its measurement to an electronic circuit. Differences in current determine the proper size group into

which the roller automatically falls.

Measurement of such microscopic differences, SKF engineers point out, is comparable to measuring the thickness of one dime in a stack of coins the height of the Empire State building.

When the "finger" makes contact with a roller, a numbered light flashes on, indicating one of six compartments into which it will drop. There are separate lights and compartments for oversize and undersize rollers.

The gauge is manufactured by Foote Pierson Company exclusively for Federal Products Corp., Providence, R. I.

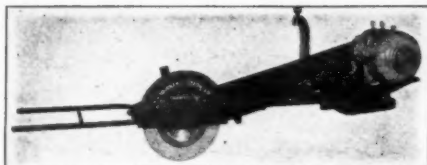
METAL MELTING FURNACE

The Johnson Gas Appliance Co., Cedar Rapids, Iowa announces a new addition to their line of industrial furnaces, the model No. 1019 metal melting furnace designed for melting lead, tin, zinc, pot metal, type metal, aluminum, etc. The unit is equipped with nine Johnson burners, each equipped with separate valve and pilot light, which permits use of as many burners as are required. It has a capacity of 1000 lbs. of lead and delivers pot temperatures up to 1400° F. The manufacturer states that it is heavily insulated to reduce heat loss, and that it can be furnished with automatic temperature controls. Removable cast iron



pot with lifting hooks is standard equipment. Further information available from manufacturer.

MUMMERT-DIXON SWING FRAME GRINDERS



- Standard sizes for 24", 20", 16", 14" and 12" wheels.
- For high speed wheels at 9,000 to 10,000 sfpm, or vitrified wheels at 5600 to 6000 sfpm.
- V-Belt Driven — Two speeds.
- Convenient speed change.
- No balancing weights required.

Write for Bulletin No. 3

MUMMERT-DIXON CO., 122 Philadelphia St., Hanover, Pa.

OUR EFFICIENT TOOL DESIGNING

*means
better production
at a lower cost*

Efficient tool designing in post-war's competitive production is a "must". Our experience guarantees you tools — designed for economy of operation, resulting in your increased production at lower costs.

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and Machine Co.

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for Machine Work?

GET AN

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- Centers Drill Bushing to Layout.
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- Clamps to Height Gage for Inspection.

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USE ECONOMY — DERIVE ECONOMY



SOCKET HEAD
CAP SCREWS

MILLED
FROM BAR



HOLLOW
SET SCREWS

MADE OF
ALLOY STEEL



ECONOMY MACHINE PROD. CO., 5207 Lawrence Ave., Chicago 30, Ill.

PORTER-CABLE TO EXHIBIT ABRASIVE BELT MACHINES AT HOTEL SHERMAN

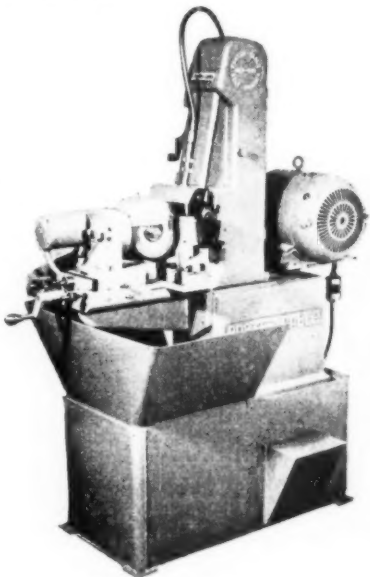
The Porter-Cable Machine Company, Syracuse, N. Y., will exhibit a complete line of wet and dry abrasive belt machines in rooms 114-116 of the Hotel Sherman, Chicago, Sept. 22-26. This exhibit will be held in conjunction with the Machine Tool Show. The same machines will be exhibited during the Metal Congress in Chicago, October 18-24.

Among machines of unusual interest is the new L-4 centerless belt surfacer. Round stock is ground and surfaced as well as bent tubing and slightly curved pieces. A soft resilient roll follows the shape of the stock, eliminating danger of uneven pieces being out of round after belt grinding.

Lengths of from $\frac{3}{4}$ " up and diameters ranging from $\frac{3}{32}$ " to $2\frac{1}{4}$ " are accommodated. Removes up to .005" ferrous material and .010" non-ferrous material in one pass. Accuracy, .005" held commercially with closer limits possible. Speed of removing .005, 1" diameter is 12 feet per minute; $\frac{1}{2}$ " diameter is 18 f.p.m.

Also to be shown is the C-6, a new belt grinder for contoured and straight-faced grinding. Here a flexed abrasive belt, 148" in circumference approaches and leaves the formed contact roll at a slight angle and drapes itself into a pattern cut into the contact wheel. The contoured piece to be ground is simply held into the pattern of the contact wheel.

The contact roll is located midway between the drive pulley and the idler, and is adjustable in order to travel the abrasive belt at any angle from zero to 15° off tangent.



The exhibit at the Hotel Sherman will be open all day until 10 P.M. Porter-Cable abrasive engineers will be on hand to analyze individual problems.

OILY FLOOR TROUBLES STOPPED with FULLERS EARTH!



An oil and grease absorbent that replaces sawdust or wood shavings. Lessens fire hazard! Stops accidents due to slipping on oil or grease! Low priced — economical — safe! Write for FREE SAMPLE or ask for trial order at quantity price!

TAMMS SILICA CO., 228 N. La Salle St., Chicago 1, Ill.

THESE NEW MORTON DRAW CUTS WILL BE FEATURED AT THE MACHINE TOOL SHOW, BOOTH 120

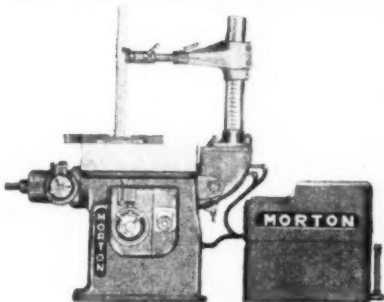


Figure 2572

Morton Hydraulic Keyway Cutter and Slotting Machine. New in design, built in 18" and 24" sizes, ample hydraulic power. A Multi-purpose Tool for production and general key-seating and numerous slotting operations. A valuable asset for all manufacturing industries and maintenance shops. We also build Keyway Cutters and Slotting Machines in various sizes up to 72" stroke with 6" width capacity.

Morton Hydraulic High Duty Draw Cut Flash Trimmer. New in design, built in sizes from 12" to 36" trimming capacity for removing the flash or upset from both sides of resistance or butt welded sheets, cylinders or special shapes in one operation. Our rams automatically adjust themselves to variation in metal thicknesses.

Also Hydraulic Light Type from 3" to 12" trimming capacity. Medium type mechanical drive for sheets and cylinders to 68" wide and sheets to 100" wide. Heavy Duty Rolling Mill Type Trimmer from 18" to 96" width capacity for continuous strip sheet and plate production.

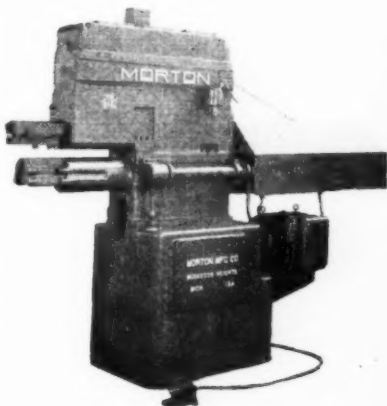


Figure 2518

We will exhibit Morton Finished Machine Keys and Special Shapes, also photographs of many new Morton Draw-Cut Machine Tools and Special Machinery. Visit us at Booth 120 at Dodge Chicago Plant September 17th to 26th.

MORTON MANUFACTURING COMPANY
MUSKEGON HEIGHTS, MICHIGAN

News of the industry.....

MONSANTO PRESENTS THREE AWARDS

Monsanto Chemical Co., St. Louis 4, Mo., has granted leave of absence at full salary for one year to three industrial scientists. The announcement of the awards, which embrace the school year 1947-48, was a step in an annual Monsanto program to enable a group of scientists to renew their studies and to establish close cooperation between industry and university laboratories.

This year's group includes Milton Kosmin of the Dayton, Ohio plant; Costas H. Basdekis of Springfield, Mass.; and Paul John Stuber of Monsanto, Ill.

ACME TOOL MOVES

The Acme Tool Company has moved to its own building at 71 West Broadway, New York 7, N. Y. Expanded offices and warehouse facilities enable them to better serve their customers needs for precision production tools.

INDUSTRIAL FINISHERS HOLD SESSIONS AT DEVILBISS SPRAY PAINTING SCHOOL

Intensive training at the DeVilbiss Spray Painting School in Toledo, Ohio, is available without charge to Industrial Finishers operating DeVilbiss Spray Equipment.

Courses of one week duration will take up on the following dates: August 18, October 6, and December 1. The first was held July 21. Lectures, demonstrations and actual practice will be devoted to latest methods and techniques of spray application.

All interested persons should write well in advance for registration.

WELDING AWARD ANNOUNCED

John W. Price, Jr., of Rose Polytechnic Institute, Terre Haute, Indiana, and Howard Sanders, of Cornell University, Ithaca, N. Y., have been selected as winners of the \$200 first prize and \$150 second prize, respectively, in the 1947 A. F. Davis Undergraduate Welding Award.

"Atomic-Hydrogen Arc Welding" was the subject of Mr. Price's paper, published in the March 1947 issue of the *Rose Technic*. Mr. Sander's article, "Welders in Diving Suits," appeared in the March 1947 issue of *The Cornell Engineer*. Each of these undergraduate magazines will also receive awards of \$200 and \$150, respectively, for being the publications in which the prize-winning articles were printed.

Sponsored by Mr. A. F. Davis, Vice President and Secretary of The Lincoln Electric Company, the Award is an annual event of the American Welding Society, which has headquarters at 33 W. 39th St., N. Y.

MELIN TOOL COMPANY BUYS OUT HOWARD DEARBORN

In line with its expansion program, The Melin Tool Company, makers of high-speed precision cutting tools, bought out the Howard Dearborn plant in Cleveland, Ohio. Melin Tool has been expanding steadily since it was founded in Detroit ten years ago by its president, Mr. William Melin.

By purchasing the Howard Dearborn plant, Melin Tool now controls the Howard live center and tool holder in addition to the standard line of Melin products. The Dearborn plant in Cleveland will be the center of distribution and Mr. Elmer Davis, Vice President and General Manager, will be in charge.

BLANCHARD MACHINE GRINDS OPTICAL MIRRORS

Blanchard Machine Company of Cambridge, Mass., recently flat-ground and concaved 30" x 6" Pyrex glass discs for the optical system of the new high velocity wind tunnel at Langley Field. Dr. Duncan E. Macdonald, Director of Boston University Optical Research Laboratory, directed the operations which required an accuracy of 3 light bands.

The Blanchard Machine Company cut the work on its regular vertical spindle Type No. 18 surface grinder. By removing 48½ pounds of glass from one casting and 60 pounds from the other, in a total time of less than 26 hours, it saved the laboratory at least 160 hours of labor on the two blanks. After grinding one side flat and the other side concave, final finishing was done under Dr. Macdonald's direction in the B.U. Laboratory. As parabolic mirrors for the National Advisory Committee in Aeronautics, these two fine optical pieces will be used at Langley Field, Hampton, Va., for Schlieren testing of air turbulence in the high velocity wind tunnels.

The application of the mass surface-grinding precision methods of metal working on glass, quartz, ceramics, sapphires, etc. gives a whole new outlook to these fields. In optics, the rapid rate of material removed in this manner makes undreamed advances available to those who want them at prices they can now afford to pay.

For instance, the rough grinding of Plano Lenses is now being done by surface grinding. Thirty-seven of them, 35 mm. in diameter, are machine-ground simultaneously. Two minutes of grinding time removes 1.5 mm. of glass from each of the 37 lenses and produces a surface that is flat to the edges with no chipping.

When applied to the production of the quartz crystals used for radio frequency control, surface grinding does a magnificent job. These "radio" crystals have parallel sides which are machine-ground from the rough, sawed surfaces—all ready for the final lapping, etching, or tumbling. Extremely flat surfaces are produced. The work pieces are ½" square x .011" to .020" finished thickness. Tolerance is .0002". Two sides are ground and production is from 800 to 1000 pieces, or from 1600 to 2000 separate surfaces per hour.

With larger optical work, it is quite a common thing to machine-grind the surfaces of Pyrex discs 10" in diameter and 2" thick to an accuracy of 2 or 3 light bands of flat. Since a light band

is only 11 millionths of an inch, this is really pretty flat. In fact, monochromatic light must be used with an optical flat to even measure such flatness.

With such modern methods at their disposal, optical, ceramic and other industries can now hope to match the mass precision of the machine tool industry and bid for the volume markets in their own fields.

SHEFFIELD CORP. BUYS MURCHEY MACHINE

According to an announcement by officials, the Sheffield Corporation, Dayton, Ohio, has made arrangements to purchase control of the Murchey Machine & Tool Co., Detroit, Mich. The latter concern manufactures machine tools, principally threading tools and tooling, thread chasers, die heads and collapsible taps. Albert J. Prance is president and William N. Gall, vice president, secretary and treasurer. The purchase price was not revealed, but it is understood the business has total assets of approximately \$400,000. The purchase of the Murchey Machine & Tool Co. is the third comparatively recent expansion of Sheffield's activities. The Threadwell Tap & Die Co., Greenfield, Mass., was acquired last year, and plans are underway for an Australian subsidiary at Melbourne. Sheffield officials announce that, excepting unpredictable developments, the Murchey acquisition concludes and completes the current planned schedule of expansion.

CORROSION AWARDS

The National Association of Corrosion Engineers has established two annual awards to be made in recognition of outstanding contributions in science and engineering as pertains to the field of corrosion. These awards, to be known as the Willis Rodney Whitney Award in Science of Corrosion, and the Frank Newman Speller Award in Corrosion Engineering, were presented for the first time during the Annual NACE Corrosion Conference at the Palmer House in Chicago, April 7-10, 1947.

Appropriately, the first recipients of these newly established awards were the men whose names they will commemorate and perpetuate. Dr. Whitney is signally honored for his fundamental work in the field of corrosion thru his establishment of the electro-chemical theory in corrosion, while Dr. Speller received just and due honor for his application of fundamental studies to practical engineering problems.

Model 25 Hi-Duty
Marking Machine



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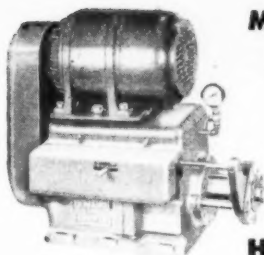


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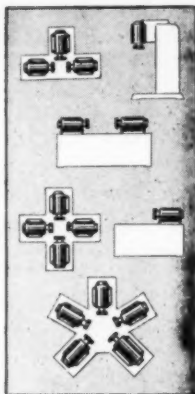
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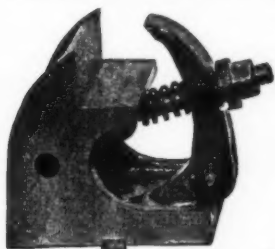
The panel at the right shows the many varied applications — for drilling, boring, reaming, etc. — vertically, horizontally or at any angle — in single or multiple arrangements. Send for complete catalog.



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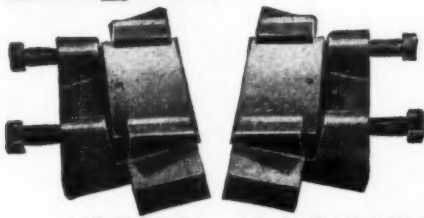
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Designers and builders of unit and way type machines for single or multiple spindle drilling, boring, reaming, tapping, etc.—Twin Ram Hydraulic Units—Match-it Gear Chucks.



HART MILLING FIXTURES

Hart Milling Fixtures firmly hold any shape stock—Round, Hexagonal, Octagonal, or Square for machining, automatically aligning the stock with the machine. Fixtures may be set up in horizontal or vertical position. The grip holds the work on bottom as well as on back. They have proved their efficiency in thousands of shops throughout the nation as well as abroad. Made in 4 sizes for stock from 1/2 to 5 inches. Shipped in pairs unless otherwise ordered.



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VICE JAWS

Highly efficient on any machine-table, the angular jaws firmly hold the work down. Quickly and easily installed by clamping or bolting into place. The hardened tool steel jaw measures 3"x6"x1/4", the angle edge serrated.

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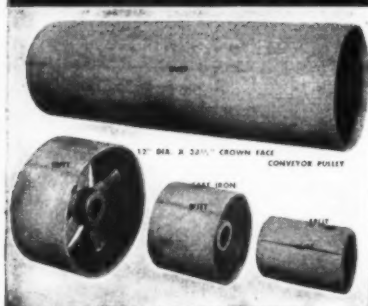
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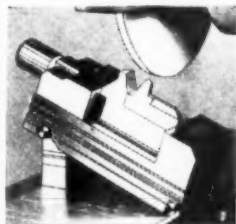
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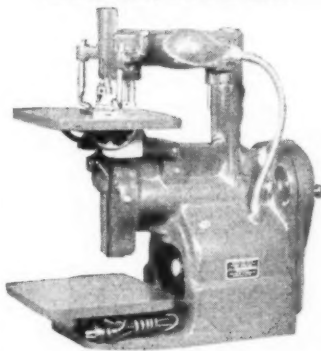
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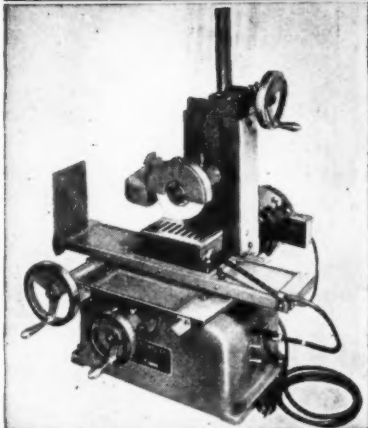


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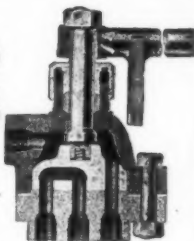
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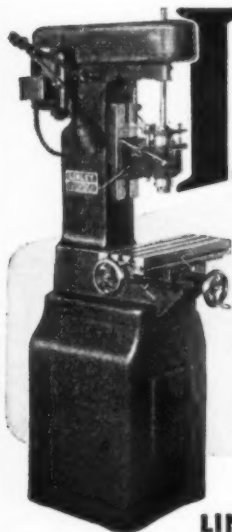
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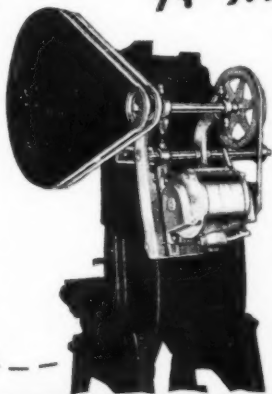
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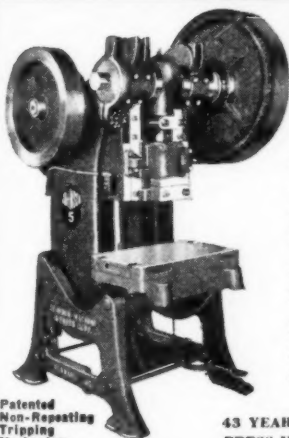
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Available LITERATURE

CINCINNATI CONTOUR CUTTER SHARPENING MACHINE

The Cincinnati Contour Cutter Sharpening Machine was designed to permit the user of formed milling cutters to sharpen milling cutters of the formed profile, or contour ground type of tooth. The 12-page bulletin, published by Cincinnati Milling Machine Co., describes the machine from highlights of design, machine base, Wheelhead unit, quick change spindle nose to a general description of the machine and the advantages of contour sharpening. Dimensional drawing and general specifications, standard and extra equipment of the machine conclude the discussion. The Cincinnati Milling Machine Co., Dept. BB, Cincinnati 9, O.

AIR GAGE

A 12-page bulletin has been issued on the Metricator Dimensional Air Gage, by Federal Products Corp., 1144 Eddy St., Providence, R. I. This bulletin discusses the place taken in inspection by air gaging. Outlines the particular use and characteristics of the Air Gage. Various illustrations show possible applications.

MADISON REAMING TOOLS

33-page booklet describes Madison Reaming Tools, shows and lists basic designs of cutters and bars. Includes cutters for steel, cast iron, standard cutters and bars, tapered shank bars, bottoming cutters and bars, multiple cutters. Also a section on special applications and specifications and price list. Madison Mfg. Co., Dept. BB, Muskegon, Mich.

ACME PALLETS

"Acme Pallets," 8-page catalog shows the use of various types of pallets for specialized handling of materials. Acme Pallet Co., Dept. BB, 15 Park Row, N. Y., N. Y.

WYZENBEEK FLEXIBLE SHAFT MACHINERY

A thirty-two page illustrated catalog showing the complete WYCO line of flexible shaft equipment, is now available through Wyzenbeek & Staff, Inc., Dept. BB, 838 W. Hubbard St., Chicago 22, Illinois.

A number of completely new WYCO machines, including the Wycomatic "Speed Changer," a variable speed flexible shaft machine, instantly selective to any desired speed, and the new Streamflex cabinet enclosed safety models, are illustrated and described along with other WYCO machines, flexible shaft tools and accessories.

Information is also included on how to order flexible shafts and recommendations as to proper models and types of shafts for various kinds of work.

CARCO PRODUCTS

Continental Asbestos & Refining Corp., manufacturers of floorings, coatings, cleansers, heat, water and metal conditioners are offering a 32-page booklet showing with pictures and descriptive material the applications possible with Carco products. The flooring is regularly specified for industrial plants, railroad stations, train sheds, loading platforms, warehouses, etc. It is laid in one day and hardened within 24-48 hours. Other products dwelt upon are floor enamel, weatherproofing for porous masonry, waterproofing and protection for tunnels, foundations, cellars, roofs, etc., metal coating, vapor resistant coating for porous surfaces and metals, etc. Continental Asbestos & Refining Corp., Dept. BB, One Madison Ave., N. Y. 10, N. Y.

CONGRESS PULLEYS AND DRILL STANDS

Congress Die Casting Div., Detroit 12, Mich., are distributing catalog sheet describing their Drill Stands and Pulleys.

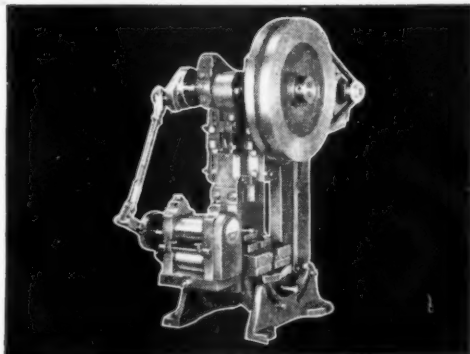
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reversed from forward to backward; adjustable brake; simple 2-bolt installation permits changing from front to side of press in seconds; rollers (2 1/4" in diameter) and friction roll are hardened and ground; bronze bearings protect all wear points. Immediate delivery.

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ARO APPOINTS J. C. HURLEY SALES MANAGER FOR ORIGINAL EQUIPMENT

The appointment of J. C. Hurley as Manager in charge of original equipment sales for The Aro Equipment Corporation, Bryan, Ohio, was announced by J. E. Allen, Vice-President.

Mr. Hurley is well-known in the automotive and farm implement industries, having served these fields for 16 years in a technical and sales capacity covering all phases of lubricating equipment problems.

HANDY & HARMAN SILVER BRAZING ALLOYS

Handy & Harman have issued a new Bulletin No. 15, describing Easy-Flo 45, a recently announced silver brazing alloy with several new and exclusive features . . . low silver content, low operating temperature and fast spreading ability. Handy & Harman, Dept. BB, 82 Fulton St., N.Y. 7, N. Y.

E EQUALS MC²

A \$100,000 display of atomic energy in action was the central theme of the 1947 Mid-America Exposition in Cleveland's Public Auditorium, May 22 thru 31. The display was built with the full co-operation of the United States Atomic Energy Commission and the nation's industries which had a part in the \$2 billion research that resulted in the war-time atomic bomb.

The Cleveland display showed the peace-time application of the development, and the atom was actually split at the exposition through the use of a special model of the machine created by Dr. John R. Dunning, who, with his colleagues, made history when he split U-235 with the Columbia University cyclotron.

The general public saw nuclear fission at work, operating models of locomotives and factory equipment and displays of its uses in medicine and science, chemistry and physics.

Serving as chairman of the committee co-ordinating the atomic display was David Dietz, F.R.A.S., science editor of the Scripps-Howard Newspapers, and author of the atomic energy article of the Encyclopedia Britannica. Major electrical, steel, chemical, construction and service companies of the nation were included among the exhibitors, according to A. W. Steudel, president of the Exposition and of The Sherwin-Williams Co.

AIR-WAY MOVES TO NEW FACTORY

The Air-Way Pump & Equipment Co., manufacturer of Air-O-Check Air Guns and Air Hose Fittings, announce removal to their modern new building at 1050 North Kilbourn Ave., Chicago 51, Ill.

According to Mr. A. C. Andreasen, president of the Company, the increased space and modern layout provided in the new plant make it possible to meet increased production requirements as well as improve operating efficiency.

BOTWINIK BROS OF MASS. WIN SAFETY AWARD

Botwinik Bros. of Mass., Inc., Worcester, Mass., won the state-wide industrial safety contest in the machinery and metal products, small units group for April. A new safety program has been planned which will embody successful features of other industrial safety programs plus a new Botwinik idea.

JARVIS BUYS DOWDING DIVN.

The Charles L. Jarvis Co., Middletown, Conn., have acquired the Dowding Divn. of the Henry L. Hanson Co., North Attleboro, Mass.

Heretofore, distribution of Dowding taps and dies was confined primarily to the New England area. The new owners intend to broaden this distribution to a national basis handled through regular representatives of The Jarvis Company.

The plant will remain at North Attleboro. Sales of the new division will be directed from company headquarters at Middletown.

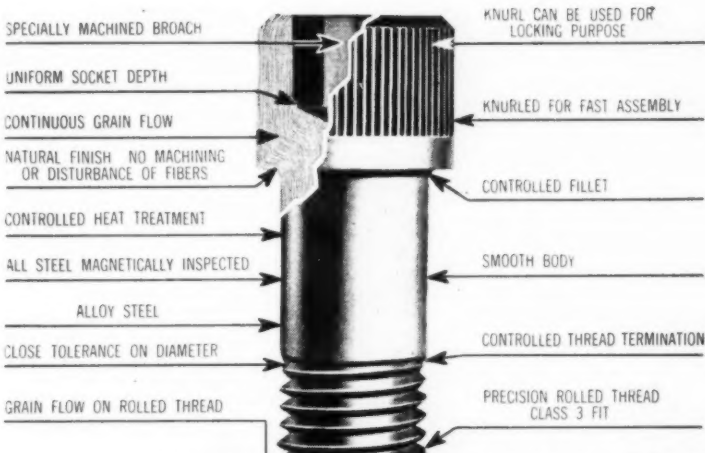
PRESSED STEEL HOLDS ANNUAL MEETING

Pressed Steel Car Company, 436 Seventh Ave., Pittsburgh 19, Pa., has a current backlog of orders for freight and industrial cars and parts totaling approximately \$52,103,000. Ernest Murphy, president, told stockholders at their annual meeting in Pittsburgh. This compares with a backlog of \$45,750,000 at the beginning of this year. All present directors were re-elected. At a meeting of the board following the annual stockholders meeting, C. S. Hanley was appointed assistant to the president, succeeding the late J. J. Moran. Other officers of the company were re-elected.

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UNBRAKO KNURLED SOCKET HEAD CAP SCREWS

REG. U. S. PAT. OFF.



Give you these OUTSTANDING ADVANTAGES

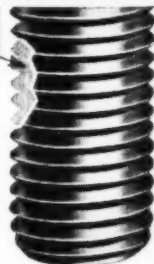
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the result of constant testing, inspection and quality control

KNURLED HEAD FOR EASY ASSEMBLY

the knurled head provides a slip- and fumble-proof grip, even for the most oily fingers, therefore, the screw can be screwed-in faster and farther before it becomes necessary to use a wrench.

We also make the famous "Unbrako" Socket Set Screw with the "Self-Locking" Knurled Cup Point, and the "Unbrako" Socket Set Screw with the "Self-Locking" Knurled Thread.



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INDUSTRIAL APPLICATION OF X-RAY DIFFRACTION

A new 6-page folder (R1063) titled "Industrial Control With X-ray Diffraction" has been announced by North American Philips Company, Inc., 100 East 42nd St., New York.

The text material describes the principles of X-ray diffraction and its performance on difficult jobs in modern industrial applications. Typical X-ray Diffraction film is shown and explained.

Geiger-counter X-ray Spectrometer is discussed in connection with qualitative and quantitative analysis work. Article utilizes photos and charts for illustrations.

WEBBER GAGES

35-page booklet reveals manufacturing equipment and methods employed by Webber Gage Co. in production of gage blocks. Discuss basic requirements for all gage blocks, various items available, specifications, use and care. Webber Gage Co., Dept. BB, 12900 Triskett Rd., Cleveland 11, Ohio.

RUSSELL & STOLL PRODUCTS

New 108-page catalog No. H-4733 describes and illustrates Russell & Stoll explosion-proof products. Contains schematic illustrations of typical applicational layouts for hazardous locations, in accordance with National Electrical Codes. Gives complete data for selection of R & S lighting fixtures and accessories, combinations, boxes and covers, fittings, switches, push buttons and pilot light stations; manual, automatic and combination starters; circuit breakers, panelboards, custom-built control and power panels, receptacles, plugs, and connectors, including many new items and combinations.

Illustrates wiring diagrams with mounting locations and outlets, dimensions, weights, list prices and all pertinent technical information regarding products listed. Formulas and engineering data are given for quick, convenient reference and ordering. Also includes complete Unilarm section. Russell & Stoll Co., Dept. BB, 150 Park Place, N. Y. 7, N. Y.

PYRO SURFACE PYROMETER

Pyro, manufacturers of precision thermo-electric and optical pyrometers introduce their Pyro Surface Pyrometer in folder. Actual pictures of pyrometers are shown, as well as types, applications and pictures of Pyro Surface Thermo-couples. The Pyrometer Instrument Co., Dept. BB, 103-105 LaFayette St., N.Y. 13, N.Y.

ALLIS-CHALMERS ANNUAL REVIEW

Allis-Chalmers Annual Review for 1946. 32 pages reveal substantial engineering progress. Topics include Power Generation, Power Distribution, Metals, Coal, Rock Products, Petroleum, Forest Products, etc. Allis-Chalmers Manufacturing Co., Dept. BB, Box 512, Milwaukee 1, Wis.

CLEAN FLOORS

Colored circular with photographs covering Sol-Speedi-Dri for cleaning industrial floors. Free sample with folder FB-19. Safety & Maintenance Co., Inc., No. 1 Wall St., New York 5, N. Y.

NATL. SUPPLY CO. ROTARY MACHINE

Bulletin No. 341 covers The National Supply Company's Type FE-17½ rotary machine for shallow to medium depth drilling. General specifications, blueprints of lubrication specifications and explosion photographs. The National Supply Company, Dept. BB, P. O. Box 899A, Toledo 1, Ohio.

ALLEGHENY STAINLESS STEEL

Three Booklets on Allegheny Stainless Steel as used in the Meat Packing Industry, the Petroleum Industry, and the Dairy Industry.

Each booklet covers specific applications, performance records, etc., pertaining to the industry, and includes information on corrosion resistance, physical properties, fabricating procedures, and forms of Allegheny Stainless Steel available.

Stainless fabricators, manufacturers of stainless equipment and firms engaged in the meat, petroleum or dairy industry may secure copies from JOSEPH T. RYERSON & SON, Inc., Box 8000-A, Chicago 80, Ill.



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AMPCO RESISTANCE WELDING ELECTRODE

Bulletin 68-B and Price List covering Ampco Resistance Welding Electrodes and alloys by Ampco Metal, Inc. Milwaukee 4, Wis. features spot welder tips and holders, seam welder wheels, and other resistance welding accessories. Diagrams and tables of properties of alloys grouped by R.W.M.A. classifications, applications, stock sizes, classifications of comparative alloys, and recommended electrode materials.

STAINLESS STEEL HANDBOOK

A 100-page pocket size handbook, "Handbook on Stainless Steel," issued by Allegheny Ludlum Steel Corp. lists the more important types of stainless and heat resisting steels made by them. A Stainless Steel Finder Chart gives the analysis of each grade, its general properties, its mechanical properties at room temperatures and the temperature ranges for hot working and heat treating. Sections following the chart describe the general characteristics of these steels, together with some suggestions as to their

application. The next section tabulates the resistance of the most widely used grades to attack by various media and the last section discusses forms, sizes and finishes available.

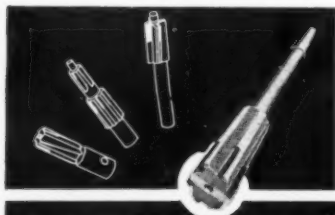
The handbook may be obtained by writing Dept. BB, Allegheny Ludlum Steel Corp., Pittsburgh, Pa.

BESLY ABRASIVE WHEELS

Charles H. Besly and Company, Chicago, Ill., have recently issued a new pocket-sized 48-page handbook for industrial users of abrasive wheels, particularly Besly-Titan abrasive wheels.

The new booklet explains the advantages of Steelbac grinding discs, contains a standard marking system chart and a series of price list tables. Other informative subjects covered include 1) Types of grain used in making these abrasive wheels, 2) Porosity control and 3) Types and uses of coolants.

The concluding section of the booklet includes photographs and descriptions. A free copy of the booklet may be secured from Dept. BB, Chas. H. Besly and Co., 118-124 N. Clinton St., Chicago 6, Ill.

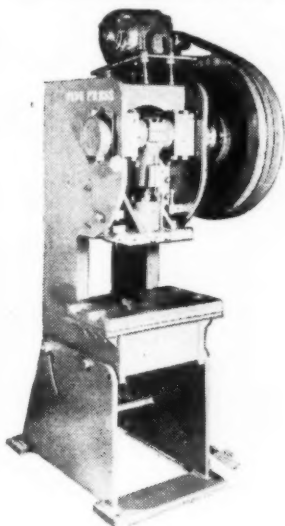


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LINK-BELT SILENT CHAIN DRIVES

Sixteen pages, Link-Belt Co. shows applications of their chain drives to various industries. Contains dimensions of sprocket wheels, horsepower ratings, and information on selection of a chain drive. Link-Belt Co., Dept. BB, 220 S. Belmont Ave., Indianapolis 6, Ind.

AIRCRAFT TOOLS

Aircraft Tools, Inc., Los Angeles manufacturer of precision tools for the aircraft, automotive and railroad industries, has issued the ninth edition of its tool catalog, 134 pages.

The catalog contains sizes and specifications, as well as photographs and line drawings of their complete line of tools, including rivet, dimpling and cutting tools, angle drills and bucking bars. Pictures taken within the plant reflect the plans and work which go into the manufacture of their products. An index plus indexing tabs make it possible to refer quickly to any particular section. Aircraft Tools, Inc., Dept. BB, 2306 E. 38th St., Los Angeles 11, Calif. (Request on company letterhead).

LYON-RAYMOND HAND TRUCK

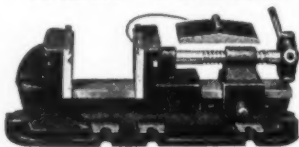
Lyon-Raymond Corporation introduces their new light-weight hydraulic hand pallet truck in a new two page bulletin. Actual photographs taken from different angles show streamlined design resulting from use of light metals and new construction techniques.

Specifications given of standard model pallet truck include capacity, lowered height, lift, length and width of carrying frame, diameter of wheels and weight. Outstanding features are also outlined for the convenience of the reader.

Bulletin may be obtained from Dept. BB, Lyon-Raymond Corp., 3304 Madison St., Greene, N. Y.

MOORE MICROSCOPE

8-page booklet on Moore Locating Microscope demonstrates typical applications of instrument which visualizes images in upright positions. Extends scope of Moore jig borer and jig grinder for inspection purposes. Moore Special Tool Co., Inc., 740 Union Ave., Bridgeport 7, Conn.

GEM VISES

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High Speed Cutting Tools

- Special high speed circular, dovetail, flat form and special tool bits.
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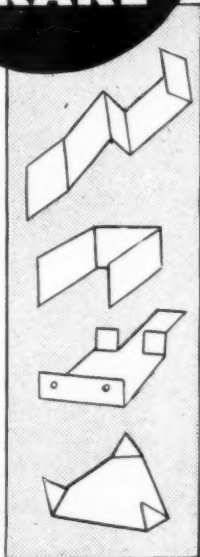
See "Die-Less Duplicating" Demonstration
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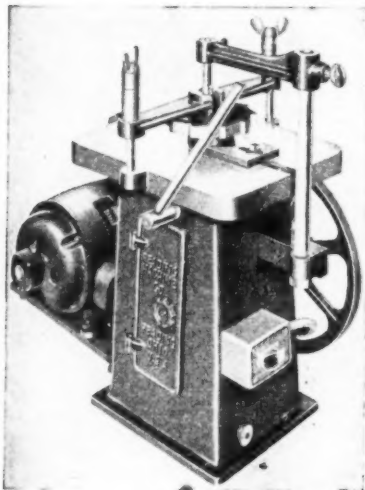
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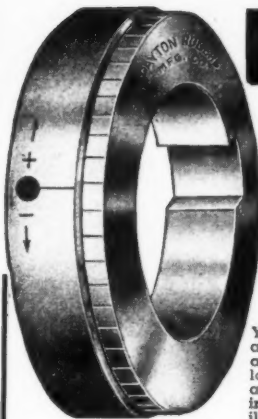
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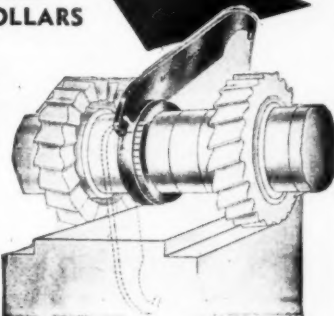
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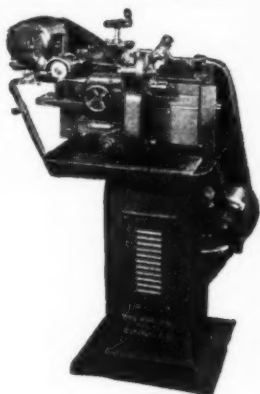
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NEW TECHNICAL BOOKS

CONVEYORS AND CRANES

By William H. Atherton. 357 pages. \$6.00. Nearly 300 illustrations. Made in Great Britain and distributed through Pitman Publishing Corp., 2 West 45th St., N. Y., N. Y.

This is a technical treatise dealing with the design and application of conveying machinery and cranes.

The first part deals in considerable detail with the mechanical handling of goods in package form (including bags, baskets, and boxes) by means of conveyors, elevators and stackers.

The second part gives consideration to those types of machines employed for handling coal and other loose materials in bulk. Both mechanical and pneumatic grain-handling plants are dealt with at some length.

The third part is devoted to a briefer treatment of several important classes of cranes; as used in heavy workshops, in shipbuilding yards, on dock quays and in railway goods yards. Ship hoists and electric telfers also receive attention.

Parts of some chapters have been based on papers read by the author before engineering societies and on various articles contributed to Cassier's **Mechanical Handling**.

The book contains tables and graphs, capacity and power formulae and worked examples relating to all kinds of conveyors. It will be of service to draftsmen engaged on design work as well as factory engineers and others responsible for the selection and application of conveyors in connection with a variety of large scale industries.

STANDARD COSTS FOR MANUFACTURING

By Stanley B. Henrici. 289 pages. \$3.50. McGraw-Hill Book Co., Inc., New York, N. Y.

Standard costs establish a fixed mark from which deviation of actual costs may take place. Control comes in when steps are taken to eliminate this deviation.

The book describes the method of installing standard-cost systems, and operating those phases of the system relating to accounting entries as well as those relating to managerial control. Discussion of alternative methods has been held to a minimum.

Questions follow each chapter and include review questions and problems in standard-cost calculations or journal entries, as well as topics not specifically mentioned in the text. The author considers the last questions the most important, "for in studying them the reader will find opportunity for independent thinking on certain side issues that, although not requiring textual exposition, are nevertheless of some interest."

Chapters advise setting standards for direct and indirect labor, materials, maintenance and other services, fuel and power and overhead. The standards are applied to operations wherein a working schedule, problems and possible errors are presented. Miscellaneous features cover job evaluation, cost estimating and selling prices.

As a branch of the science of management, standard costs should be of interest to executives and those aspiring to be executives.

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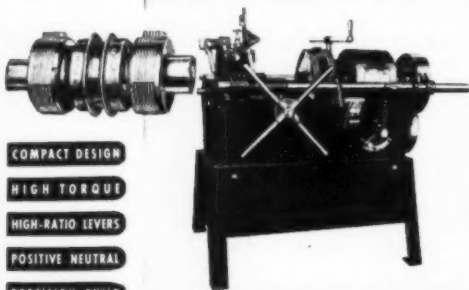
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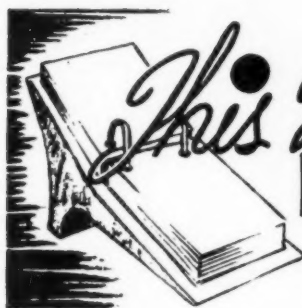
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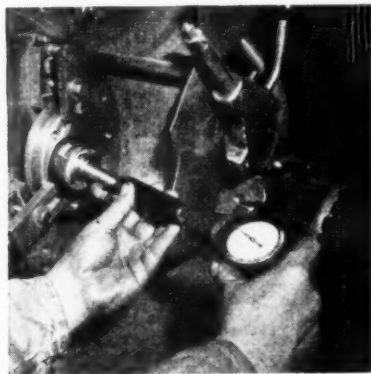


This Month's **INDUSTRIAL FILMS**

THE DIAL INDICATOR AND DIAL INDICATOR GAGES

*20 and 18 minutes, respectively.
Sound. Color. 16 mm. Obtainable
from Federal Products Corp.*

Federal Products Corp.
Sales Promotion Dept.
Providence 1, R. I.



Since the two films complement each other, Federal Products has joined them. The first, "The Dial Indicator," shows principles of Direct Measuring and of

Precision Measuring. It explains the meaning of tolerances, how they are applied to mass production and how the Dial Indicator checks them. The Dial Indicator mechanism, characteristics, and its practical application are demonstrated.

The second, "Dial Indicator Gages," demonstrates in scenes taken in modern shops, how Dial Indicator Gages may control dimensions of interchangeable work-pieces. Direct measuring Dial Indicator thickness gages and gages for fast sorting of material for thickness are shown in use. Precision measuring or comparator type Dial Indicator Gages are shown and explained in detail with demonstrations of their purpose, proper use and correct handling by the operator.

There is no charge for one-time showings, except return transportation. The films are of value to chief instructors and tool engineers as well as to apprentices.

• • •

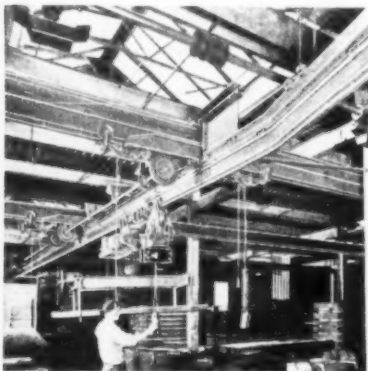
UP AND OVER

*19 minutes. Sound. Black and white.
16 mm. Obtainable from American
MonoRail Co.*

American MonoRail Co.
13107 Athens Ave.
Cleveland, Ohio.

This is a descriptive film in which MonoRail defines its activities with regard to industry in general. The script

is used as a sales promotion piece and also for personnel training, although it does not carry too much "plug" material. The main thought in the film is the possibility of using overhead handling equipment for various jobs.



Film may be obtained by getting in touch with MonoRail offices.

• • •

GRINDING CARBIDE TOOLS

30 minutes. Kodachrome with sound. 16 mm. Obtainable from Norton Co.

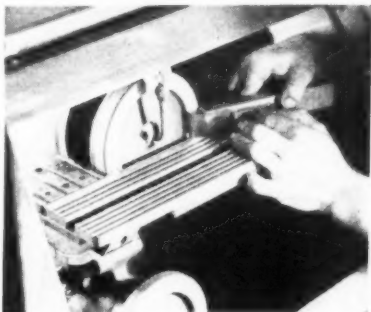
Norton Company
Publicity Dept.
Worcester 6, Mass.

This film deals with the various phases of grinding carbide tools—the grinding of dulled tools, the reconditioning of broken tools, grinding a chip breaker, grinding a carbide tipped scraper, re-sharpening reamers, face mill, etc.

Emphasis is placed on the care of diamond wheels—the proper method of mounting, the correct method of using dressing and truing tools—in the interest of getting maximum life and economy.

Prior to production of this film a thorough study was made of actual shop methods in the use of both Crystolon and diamond wheels.

This is one of a series of Norton training films on grinding. They are available to industrial apprentice schools,



foremen's groups, vocation schools, colleges and universities—wherever machine shop practice is taught.

LIGHT GAUGE RESISTANCE WELDERS

Weldex, Inc., has issued a 10-page catalog describing their complete line of bench and floor models from 1 KVA to 7½ KVA. A feature is three pages of illustrations of typical applications, including examples of projection and spot welding, from wire of .004" dia. up to 14 gauge cold rolled sheet. Weldex, Inc., Dept. K, 7325 MacDonald Ave., Detroit 10, Mich.

FIORE ALLOY SPRAYER

Folder discusses the Fiore Alloy Sprayer, which melts and sprays low fusing alloys and metals 100 to 600 degrees F. Lead alloys, lead, tin, bismuth, lead-tin-bismuth alloys are among materials that can be sprayed with the gun. Metalloy Sprayer Co., Dept. BB, 135 Liberty St., N. Y. 6, N. Y.

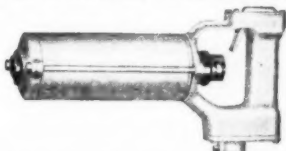
G-E STATION-TYPE CUBICLES

GEA-3658A, 24-page, two-color bulletin. G-E station type cubicles for power station service up to 34,500 volts and 2,500,000 kva. Operating curves, air flow charts, and diagrams of typical installations. Gen'l. Electric Co., Dept. BB, Schenectady, N. Y.

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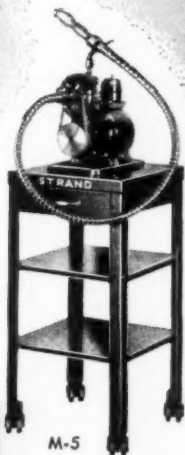
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RADIOGRAPHY IN MODERN INDUSTRY

By Eastman Kodak personnel. 122 pages. \$3.00. Eastman Kodak Co., Rochester 4, N. Y.

Radiography is a process which provides a film record of the internal condition of a product, accomplished by passage of x-rays or gamma rays through an object onto a film. Expensive machining of unsound parts is eliminated by withdrawing them from production lines as soon as a defect is caught.

Among subjects discussed are X-Ray Generating Apparatus, Geometric Principles, Factors Governing Exposure, Radiographic Screens, Scattered Radiation, Sensitivity and Detail Visibility. Some special techniques treated are microradiography for use with substances too fine to be seen with the naked eye, fluoroscopy, photoradiography, depth determination of a flaw, etc.

The book concludes with chapters devoted to Kodak Industrial X-Ray Films, Processing, The Processing Room and appendices on The Sensitometric Characteristics of Industrial X-Ray Films, Protection of Personnel and Unsatisfactory Radiographs. Graphs, pictures and tables supplement the text.

The book will be of interest particularly to designers, engineers, production men, inspectors and more generally to management.

HOMER SEPARATORS AND PULLEYS

Six-page bulletin shows styles of Permanent Magnetic Separators and Pulleys and application drawings to show how units are adapted to manufacturing operations. The Homer Mfg. Co., Inc., Dept. I-34, Lima, Ohio.

CONCO CRANES

Conco Engineering Works, Mendota, Ill., has just released a new 8-page catalog illustrating and describing in detail their complete line of hand-powered and electric cranes, hoists and trolleys. The new bulletin, No. 3000, is available on request.

TURCHAN DUPLICATING MACHINE

Catalog showing use of Turchan Hydraulic Follower Machine for duplicating dies, moulds, patterns or original forms from hard or soft models. Turchan Follower Machine Co., Dept. BB, 8259 Livernois, Detroit 4, Mich.

TEXTOLITE LAMINATED PLASTICS

Booklet on Textolite laminated plastics, 64 pages, published by the Plastics Divn. of General Electric Co., Pittsfield, Mass.

Information on manufacture, application engineering and properties of all types, tubes and rods, bearing materials, silent gears, decorative surfaces, translucent sheets, nameplates, etc.

G-E PERMANENT MAGNETS

Booklet on G-E permanent magnets, issued by the Metallurgy Division of the General Electric Chemical Dept., Pittsfield, Mass.

General information on permanent magnets and technical data on characteristics, design, properties and applications of the G-E material.

PARKER-KALON CAP SCREW

"How is your 'Eye-Cue?'," booklet of optical illusions, employed as contrast to Parker-Kalon Size-Marked Gear Grip Socket Head Cap Screw. To be distributed at National Machine Tool Show, Booth No. 243A or copy may be obtained from Parker-Kalon Corp., Dept. BB, 200 Varick St., N. Y. 14, N. Y.

WALLACE TUBULAR PRODUCTS

Engineering Data Book by the Wallace Tube Co. 66 pages of data on properties of tubular products. Of interest to purchasing agents and engineers. Request on company letterhead to Wallace Tube Co., Dept. BB, 1300 Diversey Pkwy., Chicago 14, Ill.

RYERSON FACILITIES IN LOS ANGELES

12-page booklet by Joseph T. Ryerson & Son, Inc., gives a quick picture story of the stocks, facilities and personnel at the company's new steel service plant located in Los Angeles.

Opened for business in October, 1946, the Los Angeles unit is the twelfth in the Ryerson nation-wide group. Joseph T. Ryerson & Son, Inc., Dept. BB, P.O. Box 3817, Terminal Annex, Los Angeles 54, Calif.

WALES-STRIPPIT PUNCHES

7 and 16 page bulletins describe Wales Types CJ and CD Hole Punching units. The CJ types are for punching mild steel up to 1/4" thick. Type CD punches holes over large and small sheets of material—limiting factor is size of die set or press. Blueprints show dimensions of various punches. Wales-Strippit Corp., Dept. BB, North Tonawanda, N. Y.

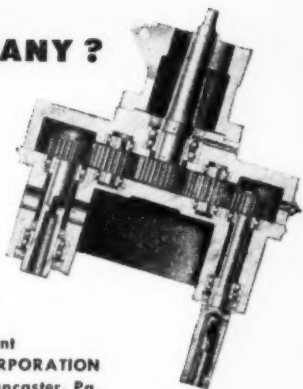
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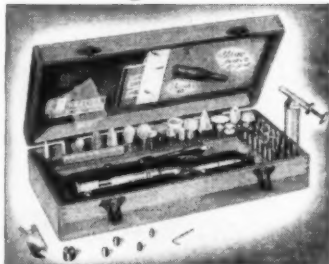
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Choose PRECISE 40 for 40,000 r.p.m. and 1/5 H.P. in an electric handtool weighing only 40 oz. Built for production Mills, grinds, polishes, deburrs any material from file-hard steel to bronze, plastics, wood or rubber. Imagine, with carbide cutters PRECISE 40 mills the hardest steel!

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PENNSYLVANIA COMMUNITY TOURS ALLEGHENY-LUDLUM PLANT

As a result of the successful "Open House" for more than 10,000 visitors at its Brackenridge, Pa., plant, June 27, Allegheny Ludlum Steel Corp. is making plans for similar plant tours in its principal operating centers.

The mile-long tour through eight production departments and numerous special exhibits was designed to give visitors a comprehensible knowledge of steel-making.

One hundred of Allegheny-Ludlum's key production men were stationed along

the route to answer questions and to encourage a leisurely study of the giant mill's intricate operations. Acting as official host was "Al," the company's animated symbol, portrayed for the occasion by a professional actor.

Visitors were met at the gates by "Al," who distributed thousands of specially prepared souvenir tour booklets, which explained the plant workings department by department.

The tour was conducted along routes, clearly marked by stainless steel signs, permitting visitors to follow production from raw stockpiles to manufacture of the finished steel. These steps included stops at the electric and open hearth furnace departments, soaking pits, blooming mills, hot strip mills, hot and cold sheet mills, tube mills and laminations department.

Actual production was illustrated to the public at all points. In the tube department, for instance, visitors were shown every step in the manufacture of a seamless tube, beginning with

the ingot and following through such operations as rough turning, piercing, annealing, drawing, polishing, and delivery to the shipping department.

This mass visit to the company's largest plant is a phase in the company's policy of getting acquainted with the neighbors in its community. The initial introduction was begun last January when company executives met with community and labor leaders in plant towns to discuss Allegheny Ludlum's operations, community interests and its future activities of importance to workers and the townspeople.

THE NEW AIR-OPERATED
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Recommended for assembling, punching,
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MODEL A—A 3-way valve, actuated by some motion from the machine to which the table is to be synchronized, allows compressed air to move a hardened and lapped piston to operate the Pawl arm. The Pawl indexes the plate and LOCKS it in the indexed position until the valve is released allowing a spring to return the Pawl, ready for the next indexing.

MODEL B—This model is an adaptation of Model A wherein a special control valve is incorporated so that the plate is automatically self-indexing. By merely turning a screw, speed is adjustable from one indexing each half second to one each ten seconds. The table is locked in position between indexings. Recommended for soldering, assembly, etc., operations where no mechanical motion is available.

*F.O.B. Brooklyn, New York

A. K. ALLEN COMPANY



List*
\$125.00

SPECIFICATIONS

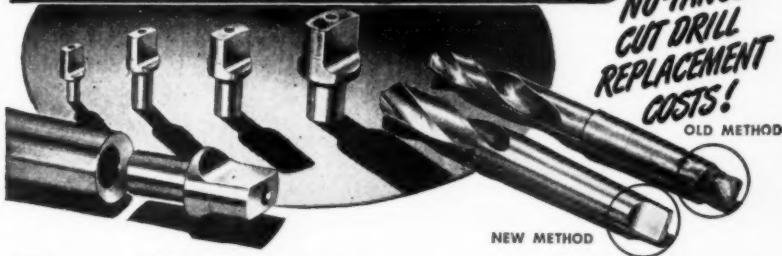
Dia. of Index Plate— $7\frac{1}{4}$ ".
Height from base to top of Index Plate— $2\frac{15}{16}$ ".
Standard 12-position Index Plate.
All working parts hardened.

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EVERLASTING FASTENINGS

HOTPOINT DEVELOPS HEAT PUMP

Hotpoint has developed a water heater that draws its heat from the surrounding air by means of a heat pump. While an efficiency coefficient of 3 to 1 has been obtained in the laboratory, experiments with home installations have not, as yet, been conducted. Following the basic engineering principle of the electric refrigerator, Hotpoint's experimental water heater reverses the utilization of transferred heat. An exposed evaporator unit is installed in the basement or utility room. With maximum exposure to room atmosphere, the freon gas contained in

the evaporator unit is allowed to assume room temperature, usually 65 or 70 degrees, and is compressed by means of an electrically driven pump. Upon compression the temperature of the freon rises rapidly because the original amount of heat is now confined to a much smaller area. Tubular coils then conduct the hot freon from the pump into an insulated 80-gallon water tank where it condenses and releases the heat into the water. The condensed freon then leaves the bottom of the tank, and through valves returns to the evaporator unit.

Surface temperature of the evaporator is always many degrees cooler than the room in which it is located and if the appliance is developed to its logical conclusion it may some day be developed to utilize the return cycle for air conditioning and dehumidifying the

home. However, present studies are concentrated on the water heating phase alone, Sharp said.

Expected advantages of the heat pump water heater are greater economy of operation and more uniform daily operation. In the laboratory 2.9 kilowatt hours of heat have been returned per kilowatt hour of motor energy used and the goal of continuing studies is to reach an efficiency ratio of 4 or 4.5 kilowatt heat hours for each kilowatt hour of motor energy. This would make the dollar cost for energy sufficiently lower to compensate for the cost of machinery.

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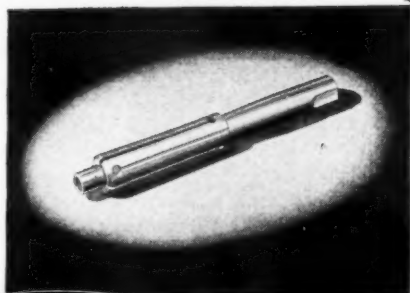
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A SATISFIED EMPLOYEE IS A COMPANY ASSET

A compatible employee-employer relationship is a big factor in keeping prices down, the Porter-Cable Machine Tool Co. of Syracuse, N. Y., claim and have proved through actual demonstration.

In 1946, the OPA gave all portable electric tool manufacturers permission to increase machine prices 15% and belt grinding prices 20%. Porter-Cable increased their prices by only 7% to 9%. This much of an increase would not have occurred, either, they claim, if they had not spent almost half of their sales dollar (\$.46) on

materials purchased from outside vendors.

Company unit labor cost has decreased 20% since 1939, while combined industries in the U. S. have had an increase of approximately 60%. Statistics show an increase of 52% in labor cost of living over 1939; Porter-Cable rate has increased 75% and average gross pay has increased 112%. These percentages do not include profit-sharing bonus.

The origin of the present profit sharing plan took place in 1941 when the company set up a plan to divide the profits among the stockholders, the customers (through reduced selling prices), working capital and the employees.

The employee section of the plan now includes a labor - management panel, a self-supporting employees association, profit sharing plan, pension plan, piece work plan and suggestion system.

The panel meets semi-monthly to discuss respective problems and solutions. The association is incorporated under its own name and officers are elected by the association members. The company financed the building of club-rooms containing four bowling alleys, pool tables and ping pong tables; the association pays rent for the building and is repaying the original investment out of revenues from receipts. Profits are distributed once a year, after preparation of the financial report, and are based on a percentage of net sales.

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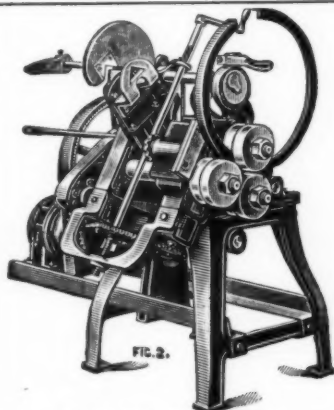


FIG. 2.

No. 14 Angle Rolling Machine

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FLATS, ROUNDS AND SQUARES**

CAPACITY—2"x2"x¼" ANGLE

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PRODUCTS OF ALL KINDS**

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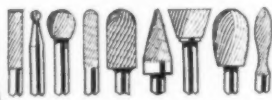
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MIDGET MILLS - 1/4" Shanks

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TEN LEADERS

MORE THAN 20 SHAPES—EACH IN SEVERAL SIZES

Obtain the best from the originator of
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SET OF
TEN

Practical for use on small
grinders, for finishing
Patterns, Dies, Parts, etc.,
in places difficult to reach
with the larger Mills.

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Truly REVOLUTIONARY Cutting Tools

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These speedy Mills for Dental Labora-
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8 times per 1/8" reduction in diameter



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BALL SEAT
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who own 60 per cent of the country's total farm acreage, consisting of 40 acres or less.

The anti-friction bearing has been a most important factor in the development of mechanized farming. One example is the replacement of the old-fashioned farm wagon with its wooden wheels by the modern, rubber-tired farm trailer. Ball and roller bearings have been responsible for increasing the speed of the farm haulage, carting produce to market from an average of 7 m.p.h. to 40 m.p.h.

A whole range of new, low cost implements are to do for the one-man farm what the cotton picker is doing for the southern plantation. It is this market to which the farm equipment manufacturers are directing their attention, the survey reveals.

The 1947 schedule of one large manufacturer calls for an increase in production of farm

FARM IMPLEMENT MAKERS ESTIMATE \$1,000,000,000 MARKET ANNUALLY FROM SMALL FARM OPERATORS

The nation's farm equipment manufacturers are predicting the small farm owner will buy \$1,000,000,000 worth of machinery a year for at least several years, according to a recent survey made by the Anti-Friction Bearing Manufacturers Association (16 E. 48th St., N. Y.). Farm savings are up \$12,000,000,000 over 1939, and a decided trend in mechanization is under way today toward one-man equipment for the small farm operators

tractors of 76 per cent over 1946, an increased production of 117 per cent in pick-up balers, combines 58 per cent, tractor cultivators 26 per cent, tractor mowers 78 per cent and corn pickers 165 per cent. But, to big farms and small farms alike, full scale farm mechanization is finally underway and according to the survey, it is estimated that by 1950, four million farms will readily produce a third more than the total production of the nation's six million farms before the war.

Mechanization promises reduction of four-man farms to one-family farms.



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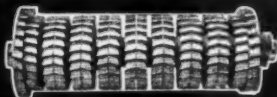
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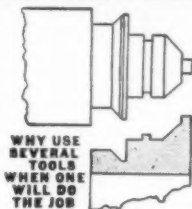
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TOOLS
WHEN ONE
WILL DO
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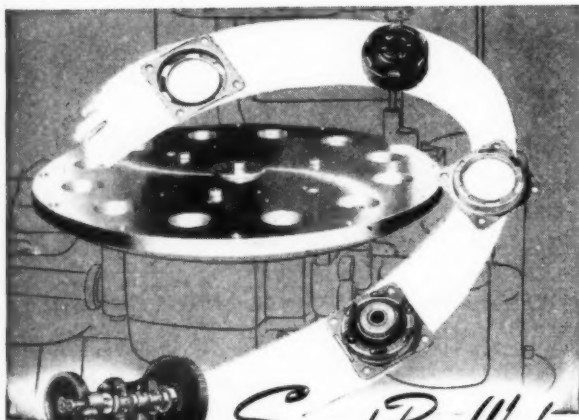
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CONFUSED THINKING ENDANGERS NATION

A warning against some "common confusions" which endanger America was voiced by Dr. Carter Davidson, President of Union College, in an address at the 13th national applied mechanics conference of The American Society of Mechanical Engineers held recently in Schenectady.

"Americans often confuse size with importance," Dr. Davidson said. "Again, the twentieth century has tended to identify speed with progress. . . Yet, what do we do with all the time saved. . . ? We either waste it, or speed up our whole

rate of living until we become neurotic, exhausted, casualties of our war for speed.

"In our economic thinking, we Americans tend to confuse money with wealth, . . . forgetting that often true wealth is not convertible into cash.

"Similarly, we tend to confuse authority with wisdom, perhaps because they should be combined," Dr. Davidson continued.

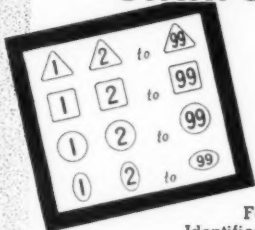
"Since the war it has been particularly noticeable that we are confusing excitement with pleasure or enjoyment. . . Are we, as a people, headed for a debauch of excitement which will result in the sickness of disillusionment and the headache of regret? . . .

"The trouble makers in our political world are also busy confusing our minds about Democracy and our Republicanism. They are not the same; de-

mocracy refers to the spirit which pervades a society, which insists upon the rights of individuals; our republic refers to our form of government. . .

"Some critics of America have been arguing of late that the founders of our nation were interested in establishing a republic, but had no faith in democracy. I insist that the same men who wrote the Constitution also wrote the first ten amendments; the Bill of Rights. . . ; the genius of the United States of America is that it has successfully combined a republican form of government with a democratic free society."

New STEEL INSPECTOR'S STAMPS

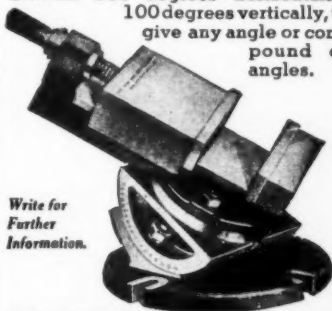


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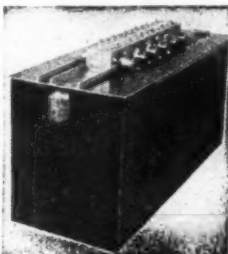
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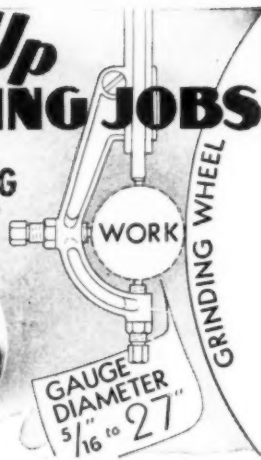
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GOVERNMENT CONTINUES PREMIUM TO PIG IRON PRODUCERS

Government premium payments to pig iron producers who exceed their shipment quotas will be continued through December 31, 1947, Housing Expediter Frank R. Creedon announced.

The premium payment plan on foundry and malleable grades of pig iron—the grades needed for housing items—was instituted last September and was originally scheduled to end on June 30, 1947. The only other plan still in operation—the one covering cast iron soil pipe—expired June 30, and will not be extended.

Recently the Housing Expediter and his staff met with the nation's leading iron and steel producers, who stated that their production of foundry and malleable grades of pig iron would drop at least 70,500 to 78,000 tons a month if the production incentive payments were terminated on June 30. This cut-back, Mr. Creedon said, "would seriously delay and impede" home-building.

Premium payments to stimulate production of critical building materials were authorized by the Veterans Emergency Housing Act of 1946 (the Patman Act). That act gave the Expediter authority to continue premium payments through next December.

In meeting with industry leaders, Mr. Creedon stated that the first eight months' operation of the pig iron premium plan (September 1946-April 1947, inclusive) re-

sulted in shipments of 785,000 tons in excess of quotas established for companies participating in the plan.

Two basic changes were made in the regulation covering pig iron premiums. One permits the Housing Expediter to notify pig iron producers "from time to time" to ship their over-quota tonnage to designated manufacturers of "items needed in, housing construction."

Payments would be made only to the extent that the pig iron producers comply with the Expediter's notifications regarding shipments to specific manufacturers of housing type items.

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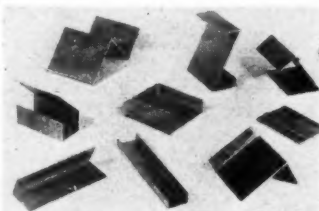
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The Bendmore handles material up to 3/32" thick a full 12" wide. Good, clean bends up to 135°. The machine is ruggedly constructed of semi-steel castings, the operating cam and steel insert in ram are heat treated to resist wear and give long life. Prompt delivery.

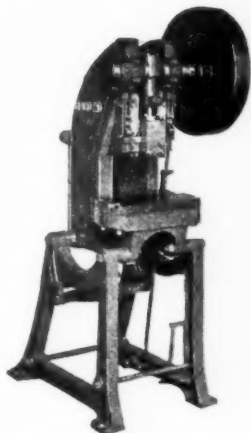
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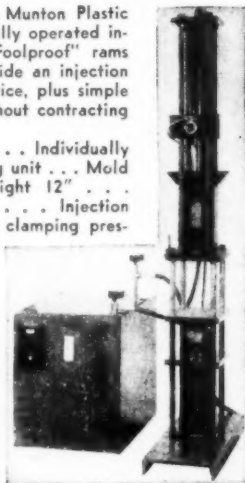
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DEARBORN MOTORS ANNOUNCES OFFICIALS

Dearborn Motors Corporation, national marketing organization for the new Ford tractor and Dearborn farm equipment line, was formed in November 1946.

President of Dearborn Motors is Frank R. Pierce, formerly vice-president in charge of employee cooperation and a member of the general staff of General Motors. Members of the Board of Directors are: Pierce; Thomas A. Farrell, vice-president of Dearborn Motors; Grant Cook of the law firm of Cook, Smith,

Jacobs and Beake; Ernest C. Kanzler, Chairman of the Board, Universal CIT Credit Corporation; Ernest R. Breech, executive vice - president, Ford Motor Company; J. R. Davis, vice - president of Ford Motor Company; and Albert J. Browning, vice-President, Ford Motor Company.

Mr. Pierce has announced the following appointments to his executive staff.

Thomas A. Farrell, vice - president, former assistant general sales manager, Kelvinator Division of Nash - Kelvinator; Merritt D. Hill, general sales manager, who has had 20 years' experience in agricultural sales work, former vice-president of Harry Ferguson, Inc.; G. D. Andrews, advertising and sales promotion manager, former vice-president and general manager of Fabricated Buildings, Inc.; C. R. Powers, procurement and engineering manager, former general manager of Harry Ferguson, Ltd.; James H. Marks, consultant on engineering and procurement, former vice-president of Packard Motor Car Company; Harry V. Snow, tractor and implement sales manager, former implement sales manager for Allis - Chalmers; David Meeker, director of education, who supervised the nation's farm machinery program during the war and later became Director of the Office of Surplus Property and Reconversion; O. L. Wigton, Eastern sales manager, former general sales manager for Richard Radiator Corp.

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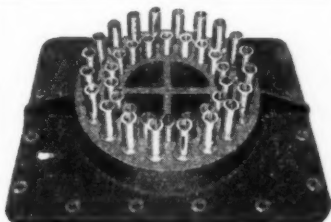


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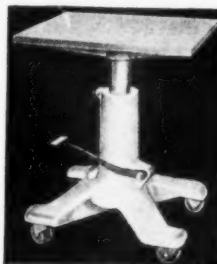
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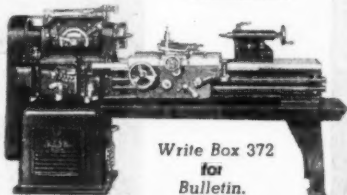
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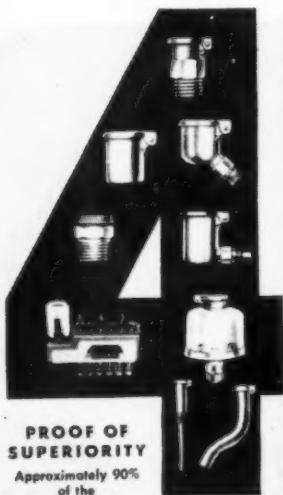
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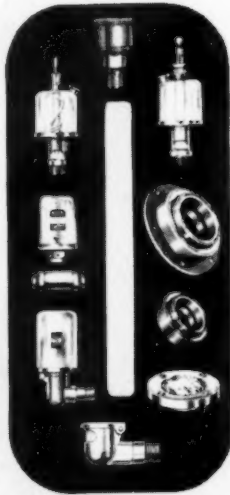
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**1948 REFRIGERATION SHOW PLANNED
FOR CLEVELAND**

"The biggest date in '48"—original slogan for the entire Fifth All-Industry Refrigeration and Air Conditioning Exposition in Cleveland next January has narrowed down to the single day of January 27, 1948, for the nation's refrigeration contractors and service engineers.

On that date, the show will open exclusively to these two groups in the refrigeration industry, and plans already are under way by the National Association of Refrigeration Contractors and the

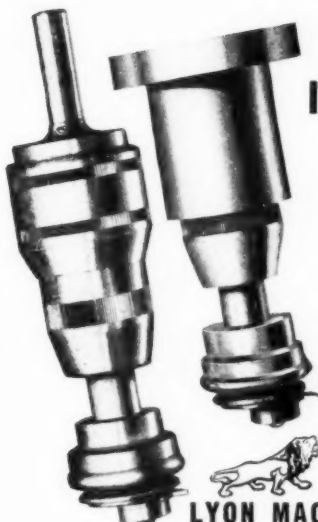
Refrigeration Service Engineers Society to take full advantage of the opportunity thus provided to view the industry's new products in special displays provided by the manufacturers.

Word received at headquarters of the Refrigeration Equipment Manufacturers Association, sole sponsors of the 1948 show, indicates that both NARC and RSES will have special events in connection with the exposition. During the week preceding the show, the service engineers will hold their 10th annual convention, and it is understood that contractors, who have national headquarters in Cleveland, also will participate actively in the show program.

Another show feature, announced by F. J. Hood, show chairman, is an all-industry show banquet to be held in the Cleveland auditorium on one of the four evenings of the exposition—

Official show hours, when the event will be open to the entire industry and trade, are 2 to 10 p.m. Monday; noon to 6 p.m. Wednesday, and 10 a.m. to 4 p.m. Thurs.

Announcements of all-industry activities of various trade groups assure the success of the show from the attendance standpoint. A mounting list of exhibitors also is evidence that the exposition will be a success from the standpoint of size and number of displays. As of July 1, 1947, the number of exhibitors increased to 139, number of spaces to 195.

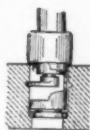


The Lyon INTERNAL GROOVING TOOL

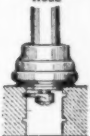
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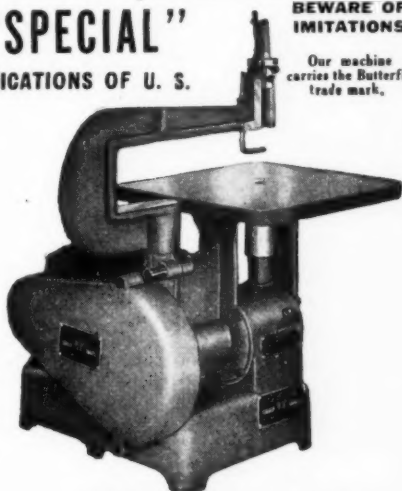
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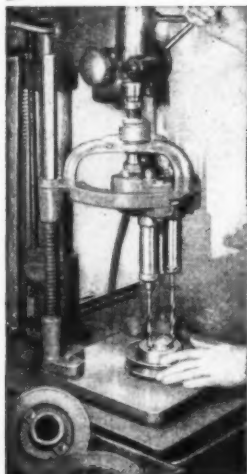
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EXPANDED PRODUCTION IS KEY TO ECONOMIC RECOVERY

High prices of food and the use of exports as an instrument of foreign policy may put the United States on the road to rationing, Leverett Lyon, chief executive officer of the Chicago Association of Commerce and Industry, recently told the congressional Joint Committee on the Economic Report headed by Sen. Taft.

"We are fighting Communism with food from the American dinner table, clothes that might otherwise be on American backs, and building materials that might otherwise be used for Ameri-

can housing," Lyon said. "We are working into an emergency economy, if not a wartime economy. This may mean that we are on the road to rationing certain products, of which food should be the first to be considered. The public will have a far sounder basis for judging the use of food as a tool in foreign policy to the extent that they are made conscious of the real meaning of exports in economic warfare in terms of their own living standards," he said.

Inflationary factors are a greater threat to the national economy at the present time than any foreseeable prospect of recession, and the chief thing the Joint Committee can do is maintain high production, Lyon said.

Steps like modernization of building codes, and removal of zoning restrictions which are no longer relevant, are needed to further building construction,

Lyon said.

Lyon said that when symptoms of business recession appeared, every public official, and the Joint Committee in particular, will be besieged with proposals designed to prevent further recession and to cure what already has taken place.

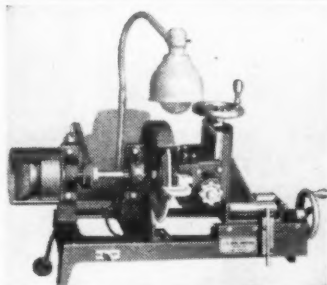
"What most of them will propose is the maintenance of the status quo in financial terms, that is, the maintenance of wages or prices or profit, whereas in reality the problem of recovery is in terms of expanding employment and production."

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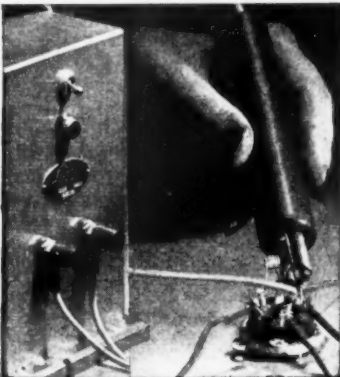
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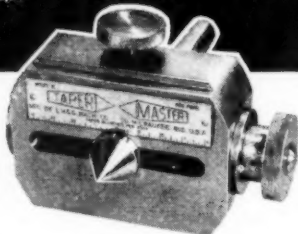
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G-E ENGINEER DISCUSSES FORGING ALLOYS

Results of investigation into the forging characteristics of high-temperature materials that may be of considerable value in the manufacture of highly stressed rotating parts in general were reported at the June Meeting of the American Society of Mechanical Engineers by L. B. Fonda of the General Electric Company's Thomson Laboratory at Lynn, Mass.

On gas turbine forgings, the G-E scientist found that the most important consideration for securing good turbine

wheels was high ductility. Sound ingots proved to be the best means of assuring this.

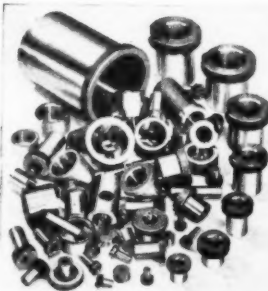
Adequate control over grain flow within the forging, the proper use of solution treatment and proper combination of inspection procedures were important factors contributing to high ductility, Fonda said.

The research involved bursting tests on 179 turbine wheel blanks and six completely bucketed wheels.

Histories were obtained from manufacturers of each wheel tested. Metallurgical testing showed that the center of the rotating wheel was the critical area and not the rim, and that the quality of the center area was much more difficult to control in a large forging than in a small one.

Regarding the shop and foundry practices used in the production and inspection of the best type blanks,

Mr. Fonda detailed the various practices that proved effective. Some vendors used an electric arc to keep ingot hot tops molten until the body of the ingot solidified. Another supplier eliminated the billet stage entirely. Some vendors developed special intermediate dies for preliminary upset of the billets, which not only prevented twisting but also helped pack the metal at the ends of the billets, thereby providing better grain refinement. In delivering only one press blow per forging heat, one vendor kept the metal hot and successfully avoided forging defects, he said.



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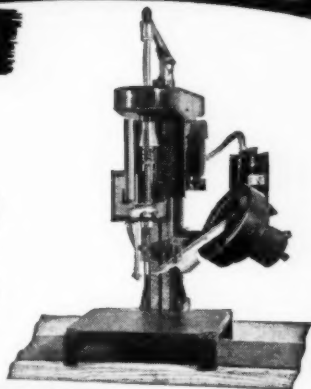
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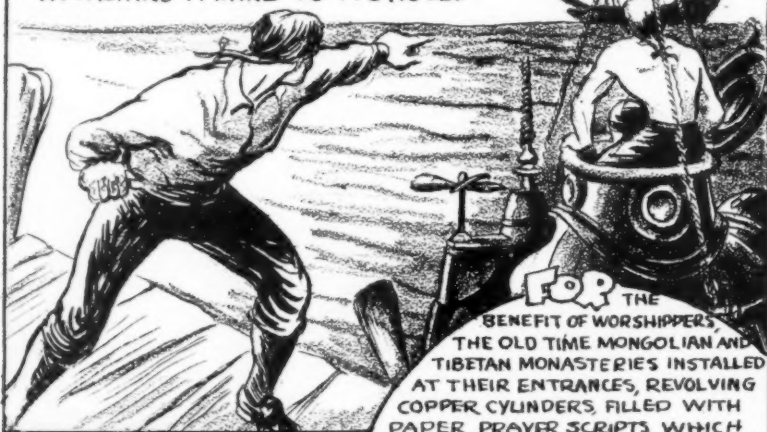
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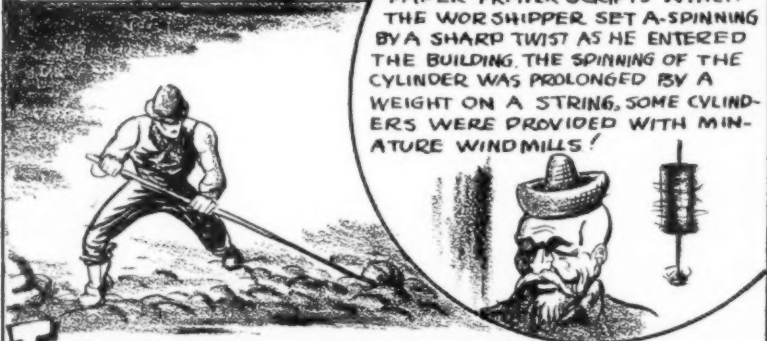
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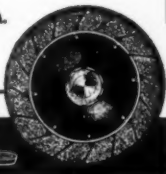
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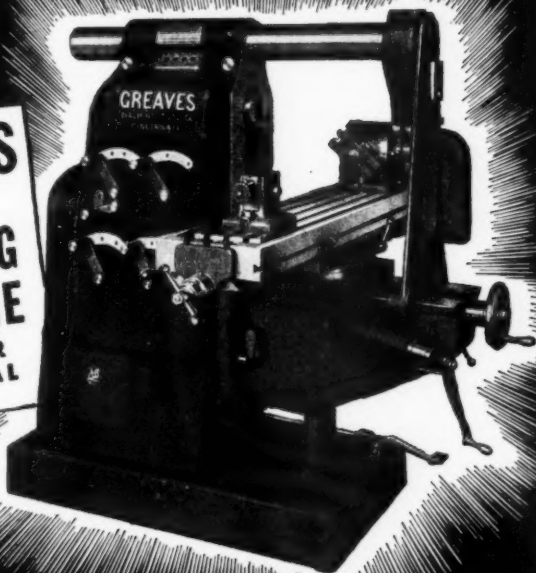
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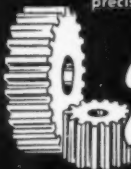
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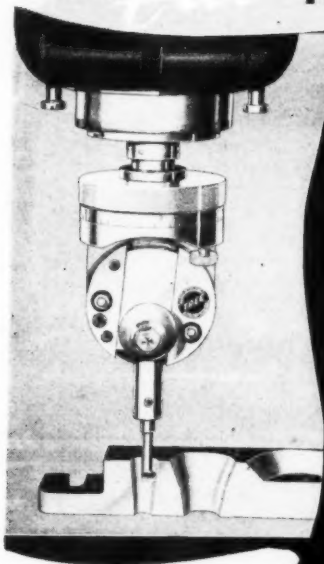
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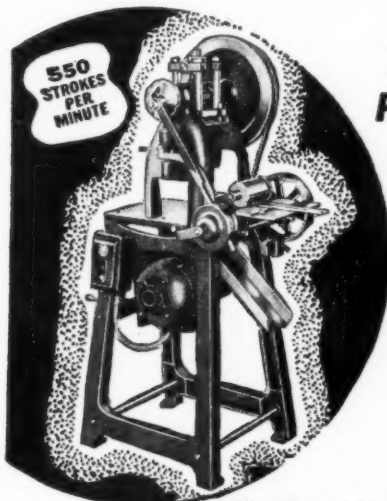
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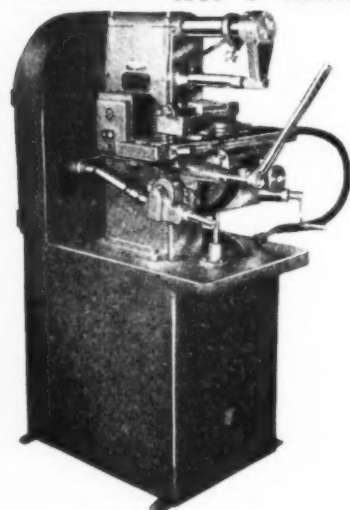
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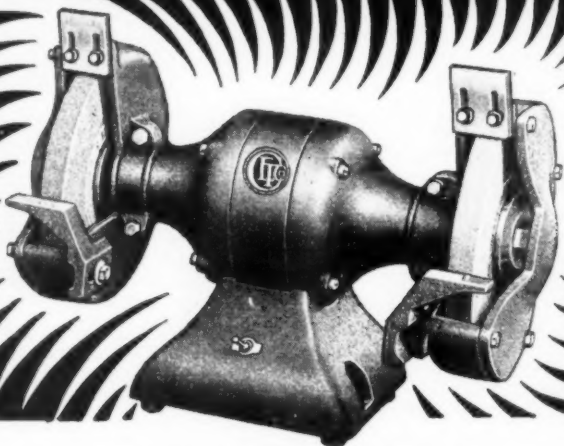


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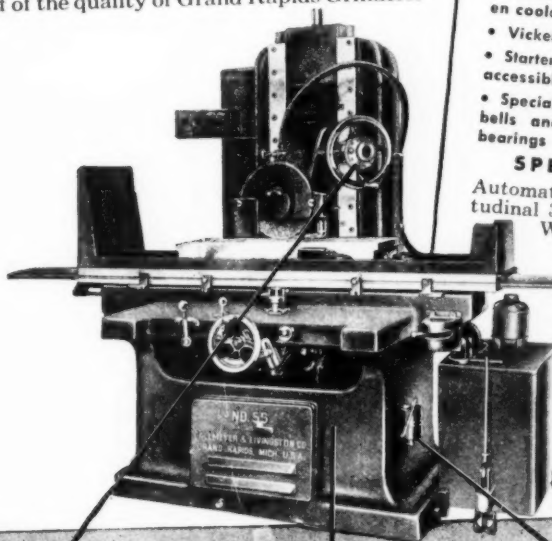
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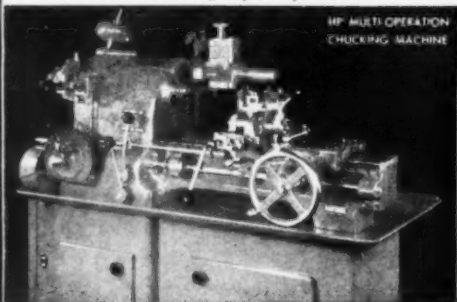
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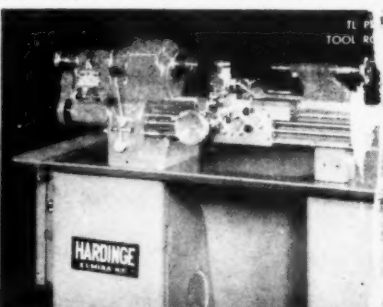
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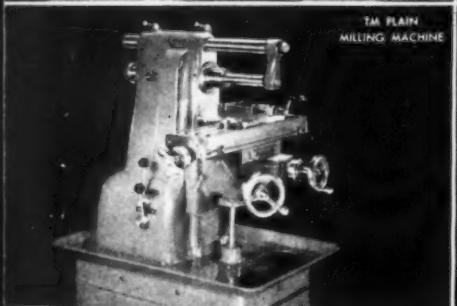
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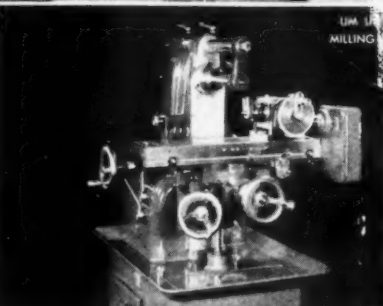
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